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Educational Theory....

THE IMPLICATIONS OF THE PERMISSIVENESS DOCTRINE IN AMERICAN EDUCATION

MEAD'S CONCEPT OF SELF: A CONTRIBUTION TO EDUCATIONAL PHILOSOPHY

THE CONCEPT OF SARVODAYA IN GANDHIAN EDUCATION

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TABLE OF CONTENTS ON BACK COVER

Educational Theory

Vol. X APRIL, 1960 No. 2

THE FIELD VIEW, COLOR, AND EDUCATIONAL PHILOSOPHY

BY MARTIN LEVIT

THIS ARTICLE EXAMINES THE QUESTION OF WHETHER OR NOT THE PROPONENTS OF THE FIELD OR CONTEXTUAL VIEWPOINT IN EDUCATION RECEIVE SUPPORT FROM THE DATA AND THEORY BEING PRODUCED BY THE EXPERTS IN THE SCIENCE OF COLOR, the science of reds, whites, and blues. I will first provide a brief reminder of certain aspects of the field view emerging in various sciences, then present the findings of the color scientists, and then relate these considerations to some aspects of a major question in educational philosophy. This question concerns the proper relationship between educational philosophy and other domains of inquiry. One reason for taking up the question of color is that while recent findings in such areas as physics, biology, and sociology have often been interpreted in their relation to educational philosophy, no similar attempt has been made, so far as I know, in the case of color, a representative of the so-called "secondary" qualities.

The Field View

What is here called the "field view" is not uniformly named or established in the various scientific disciplines. But its increasing prominence and significance are quite commonly acknowledged. The development of this viewpoint is probably one of the most revolutionary events in the history of man.

Certain common features of this development can be traced. It rests upon centuries of varied relations of men to nature and to each other. In a generally non-deliberate fashion, men have been increasing the range and variety of relations among the objects of their experience. With increasing adoption of the scientific method of knowing, men have more deliberately extended their ability to interrelate the objects and properties they knew. In this process, the original objects and properties have been losing their status of primitive, underived elements and have been seen as "emergents," "constructs," parts explained by wholes," etc. Terms denoting relations, wholes, events, have become basic, and terms denoting things, states of being, and entities have become derivative. Concomitantly, a

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prospective attitude of inquiry has been replacing the retrospective ontological attitude.

Thus, in physics, the falsity of the concept of intrinsic simultaneity of two events and, therefore, the falsity of the idea of absolute time were indicated only when the range of human transactions had been extended into the study of great distances. In Relativity Theory the dependence of the correctness of any statement made about physical bodies on a "frame of reference" has replaced older concepts of absolute properties. Mass, size, energy, etc., are not regarded as properties which bodies intrinsically have. Bodies, for example, "have" a rest mass and a mass of motion, and a body may have these different masses simultaneously, for it may be at rest with respect to one observer and in motion with respect to another.[1] Perhaps the most humane aspect of the powerful advances in this area is that the physical scientists are quite prepared to find nature "obeying" new laws as the range of their transactions with nature extends. Einstein and Infeld inform us that "there are no eternal theories in science."[2]

Biologists now postulate process, not substance, as a basic term. The concept of eternal forms endlessly manifesting themselves has been replaced by the concept of transformation of forms in a transactional web of life. Easy simplicities, partly engendered by the Theory of Evolution itself, are disintegrating. The notion of a unilinear, progressive, and competitive development gives way to descriptions which tell of branching, progressive, and regressive trends, of parasitism and symbiosis, of multiple solutions to problems, of order and disorder, of traits that are adaptive in one context but not in another.

In other areas of biology, relatively stable or homeostatic conditions are seen as products of dynamic processes, foundational chapters on cells as atomistic units give way to expositions of the "organismic concept" and "physiological gradients," and the gene is described as the carrier of a unit character only as a matter of convenience. Theodosius Dobzhansky tells us that "it is generally agreed that the adaptive value of a genotype in an environment is a property of the genotype as a whole, and not a simple sum of the values of its constituent genes. A gene, A, may be deleterious in combination with B, neutral with C, and useful with D."[3] And Julian Huxley writes that "all characters of adult organisms are always the result of the interaction of heredity and environment."[4] Increasingly, biologists are giving up the reductionist attempt to explain the whole of man in physico-chemical terms. Increasingly, they urge that the category of widest relations, the social (which includes the biological), be used for this purpose.

The variety and open possibility characteristic of entities that may take on different traits in different fields are found also in man and society. "Culture," "society," "experience," and other terms denoting relations and unitary wholes are becoming basic. A sociologist states that the culture concept represents the view that "a society is . . . so unitary that the abstraction of any institution

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[1] I am indebted for this illustration to unpublished material written by Professor Norman N. Royall, Jr. of the University of Kansas City.

[2] *The Evolution of Physics*, p. 77, New York: Simon and Schuster, 1938.

[3] "Heredity, Environment, and Evolution", *Science*, 1950; 111· p. 165.

[4] *Heredity: East and West*, p. 7, New York: Henry Schuman, 1949.

does a fatal violence to comprehension, and that each cultural configuration so permeates all behavior in a society as to shape and dominate all action."[5] Man is not by nature profit-seeking; generally, he seeks profit in a society where he can acquire private property, prestige, and power through such behaviour. Nor does man naturally seek prestige and power. Democratic and autocratic behavior, jealousy, aggression, the Oedipus complex, and a host of traits emerge in and because of the relations of social structures, biological propensities, and individual experiences. Suicide, divorce, crime, and other manifestations of choice or will are related to a variety of causal factors. Kardiner's concept of "basic personality structure" and Riesman's picture of tradition-, inner-, and other-directed personalities are but two attempts to organize some of the recent findings. Perhaps the most important finding about culture is that men have tended to promote the familiar and known into the more exalted status of the natural, real, and self-evident.

In varied ways, the diverse fields of inquiry acknowledge the central importance of the relation of the knower to the known, of mode of inquiry to outcome of inquiry. This recognition may be expressed in J. Robert Oppenheimer's criticism of the eighteenth century conception of the physical world. He wrote:

> A physical world so pictured could not but sharpen the great gulf between the object and the idea. It would do much to bring about that long, critical, and, in its later phase, irrational and mystical, view of the relations between the knower and the known that started with Locke and is perhaps even today not fully . . . ended.[6]

Or this recognition may be indicated in the following way by a student of mass culture: "We hold that the stimulus in popular culture is itself a historical phenomenon and that the relation between stimulus and response is pre-formed . . . by the historical and social fate of the stimulus as well as of the respondent."[7]

These men are *not* saying that properties are in things and that the knower merely selects and abstracts forms intrinsic to objects. What these and other men are saying is that properties are regularities in interaction, including interaction with men. Water has its being and its usual properties only under and because of certain conditions. It expands *when* frozen. A thing *becomes* a stimulus only because of certain relations it sustains to numerous and interacting physical, physiological, and social factors.

COLOR

Now, how stands the matter in the science of color? If we relied on a recently published philosophy of education textbook, we would conclude that color is not a field emergent. The author writes:

> . . . in awareness the mind abstracts the forms from individual things. The forms, unlike their matter, are definite and fixed. Each shade of color has its own

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[5]D. G. Macrae, "Sociology", in *Scientific Thought in the Twentieth Century* (A. E. Heath, ed.); London: Watts and Co., 1951, p. 368.

[6]*Science and the Common Understanding*, p. 14, New York: Simon and Schuster, 1954.

[7]L. Lowenthal, "Historical Perspectives of Popular Culture," in *Mass Culture* (B. Rosenberg and D. M. White, eds.); Glencoe, Illinois: The Free Press, 1957 p. 57.

> character. . . . Definitions catch and fix the very structure of things. When the thing changes, there is a new structure or form to be apprehended.[8]

And he adds that "the secondary qualities do exist in their objects as we judge them to exist under certain conditions of observation. The red is in the surface of the fire hydrant and, under standard conditions of the medium, sense organs, and brain, is abstracted from the energy patterns that bring it to the brain."[9]

In brief, this view seems to hold that sensed color is some kind of copy of a color form which the observed object has, and that any *real* change in color could occur only when the thing itself changes.

However, this view finds no support among the scientists of color whose writings I have been able to find. The color scientists have clearly adopted a field view, and the theory of the author of our philosophical textbook is awarded about the same status as the geocentric theory.[10] The color experts commonly speak of "the production of color." This is seen as a complex yet unitary process involving a chain of interacting factors, some generally more important than others, but no one, two, or few of which are themselves responsible for the production of color.[11] In some contexts, any one of the factors may play a decisive role,[12] but always "the actual cause of the color of an object is quite a complex affair."[13]

A produced color depends in part on the composition, temperature, rate of flicker, and other characteristics of the light source.[14] Sodium light will cooperate in making all objects appear yellowish.[15] Using samples of two common and similar materials, it is found that "under one (daylight) illumination, sample A is redder than sample B; under another (incandescent Mazda) illumination, the reverse is true."[16] To facilitate cooperative research, color experts have standardized light sources and other aspects of the field—with no hint of the idea that any given field has a superior reality.

The wave length of light is a major factor in color production, but no invariant one-to-one relation exists between this factor and a color sensation. There are numerous everyday instances wherein two rays of light have very different spectral

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[8]H. S. Broudy, *Building a Philosophy of Education*, p. 133, New York: Prentice-Hall, Inc., 1954.

[9]*Ibid.*, pp. 136–37.

[10]P. J. Bouma, *Physical Aspects of Color*, p. 204, Eindhoven, Holland: Phillips Industries, 1947. See also, R. M. Evans, *An Introduction to Color*, p. 115, New York: J. Wiley and Sons, 1948, and K. T. A. Halbertsma, *A History of the Theory of Colour*, p. 98 and *passim*, Amsterdam, Holland: Swets and Zeitlinger, 1949.

[11] American Society for testing Materials, *Symposium on Color: Its Specification and Use in Evaluating the Appearance of Materials*, pp. 1, 23–33, 37–44, Baltimore: The Society, 1941.

[12]Committee on Colorimetry, Optical Society of America, *The Science of Color*, p. 170, New York: T. Y. Crowell Co., 1953.

[13]Evans, *op. cit.*, p. 60.

[14]W. D. Wright, *The Measurement of Color*, pp. 2–4, London: A Hilger Ltd., 1944. It should be noted that these characteristics of objects are in turn dependent on many other factors. The fact that one must write "forward", toward a selected question, may be one of the psychological reasons why contextual basic terms are often converted into objects with intrinsic properties.

[15]Bouma, *op. cit.*, p. 13.

[16]American Society for Testing Materials, *op. cit.*, p. 37.

compositions and yet cooperate in producing the same color sensation.[17] In fact "the number of actual colour sensations is very much smaller than the number of spectral distributions. . . ."[18] Color sensation, then, is not absolutely identifiable with fixed characteristics of light waves.

Another factor in the production of color is the nature of the observed object —not merely its surface features and the presence or absence of pigment, but also the atomic arrangement and composition of the material,[19] the fineness of the particles, the relation of the surface to the rest of the object,[20] the size, shape,[21] and motion[22] of the object, etc. All substances modify to some degree the light which is reflected to the eye from the light source. Some do so by absorbing, reflecting, and transmitting light rays in diverse ways or in different degrees.[23] Thus, materials which reflect most of the sunlight are normally seen as "being" white. However, it is never the object itself which produces its own color, and there are always a large number of characteristics of the object which contribute to color production. Objects have provided no evidence to those working carefully with them of having a "form" of color.

There are many other factors involved. Here I can mention only a very few of them. The medium through which the light waves or particles move affects the produced color by differential absorption or scattering of the rays, depending on the density of the medium, the size and shape of particles in it, and certain relations of the medium to its surroundings.[24] Moreover, such factors as the shape, size, movement and color of simultaneously or successively presented objects play a normally important, at times decisive, role in determining what color we judge a particular object to "have."[25] We are told that "every color depends upon contrast for its life. It will fade appreciably or even die when there is no color to compare it with."[26]

The relation of the knower and the known plays a very important role. The observer is not regarded by the color scientists as a passive recipient of color, but as a factor in the production of color.[27] Structural equipment[28] and physiological

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[17]R. F. Deimel, "Color", *The Encyclopedia Americana*, (vol. 7), 1955, p. 306. See also, W. D. Wright, *op. cit.*, p. 35.

[18]Bouma, *op. cit.*, p. 24.

[19]N. L. Allport and J. W. Keyser, *Colorimetric Analysis*, (vol. 1, 2nd ed.), *passim*, London: Chapman and Hall, Ltd., 1957.

[20]A. G. Abbott, *The Color of Life*, pp. 5–7, New York: McGraw-Hill Book Co., Inc., 1947.

[21]C. L. Sanders and G. Wyszecki, "Correlate for Lightness in Terms of CIE–Tristimulus Values. Part I", *J. of the Optical Society of America*, 1957; 47: pp. 398–404. See also R. W. Burnham, "The Dependence of Color upon Area," *American Psychologist*, 1949; 4; pp. 230–31.

[22]H. Hartridge, *Colours and How We See Them*, pp. 120, 131–35, London: G. Bell and Sons, Ltd., 1949.

[23]M. Graves, *Color Fundamentals*, pp. 15–18, New York: McGraw-Hill Book Co., Inc., 1952.

[24]W. D. Wright, *op. cit.*, pp. 9–12. See also, S. Q. Duntley, "The Optical Properties of Diffusing Materials," *J. of the Optical Society of America*, 1942, 32: p. 61.

[25]See W. R. J. Brown, "The Effect of Chromatic Surrounding Fields on Color Discrimination," *J. of the Optical Society of America*, 1950, 40: p. 797. See also, Graves, *op. cit.*, p. 108, and Hartridge, *op. cit.*, pp. 120, 126.

[26]M. Luckiesh, *Color and Colors*, p. 93, New York: D. Van Nostrand Co., Inc., 1938. See also, G. Katona, "Color-Contrast and Color-Constancy," *J. of Experimental Psychology*, 1935, 18: pp. 29–63.

[27]Evans, *op. cit.*, p. 59.

[28]Halbertsma, *op. cit.*, pp. 214–19.

condition,[29] adaption and fatigue,[30] experience and anticipation,[31] the part of the retina which is stimulated (for the cones are unevenly distributed over the retina),[32] are among the many variables involved here. It is worth mentioning that there is no sharp line between color-blind and normal eyes; there is a great variety of kinds and degrees of color-blindness.[33]

The present human retina is sensitive to only a narrow band of radiation falling between red and violet.[34] The world would appear far different to man if his eyes were sensitive to, for example, X-rays. Different animals vary greatly in the ability to participate in the color production process. Some are unable to "see" some of the colors that we "see," while others can "see" colors that are outside our color-vision range.[35] Man's ability to "see" colors has undoubtedly changed in evolution—the human retina was at first probably a purely rod aparatus, permitting sensations of only shades of white and black—and the human eye is probably still evolving.[36] Thus, the color that objects "have" must be placed in a frame of reference which includes time and the observer.

In the terms of a committee of color scientists, color is a "psycho-physical concept," and the observer and the observed must be considered simultaneously in their interaction.[37] The committee states that "it is not legitimate to attribute colors to objects."[38] All the consulted experts who have made explicit judgments about this question agree with this conclusion.[39]

EDUCATIONAL PHILOSOPHY

Our usual judgments about color are interesting as yet another example of those common modes of thought which solemnly convert the familiar end product into a real and external thing. One group of color experts wrote: "We are so familiar with the 'daylight color' of objects that to the layman this is the characteristic color; in fact so characteristic that it leads to the usage, widely different from the standard [i.e. scientific] one, of the term *color* as a name for material substances."[40] This ontological attitude has generally characterized the dualistic and atomistic philosophies of education which tend to find that some values are good in and of themselves, tend to believe that a child must first know something before he can think with the thing he knows, and tend to prefer grammar to communication.

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[29]D. G. Judd, *Color in Business, Science, and Industry*, p. 74, New York: John Wiley and Sons, Inc., 1952.

[30]H. D. Murray (ed.) *Colour: In Theory and Practice*, pp. 115–21, London: Chapman and Hall, Ltd., 1952.

[31]Hartridge, *op. cit.*, pp. 131–35.

[32]A Maerz and M. R. Paul, *A Dictionary of Color*, (2nd ed.), pp. 11–12, New York: McGraw-Hill Book Co., 1950.

[33]Wright, *op. cit.*, p. 52. See also W. R. J. Brown, "Color Discrimination of Twelve Observers," *J. of the Optical Society of America*, 1957, 47: pp. 137–43.

[34]Wright, *op. cit.*, pp. 1–2.

[35]Halbertama, *op. cit.*, pp. 238–49.

[36]*Ibid.*, p. 250. See also Murray, *op. cit.*, p. 95, and Graves, *op. cit.*, p. 69, and Bouma, *op. cit.*, p. 200.

[37]Committee on Colorimetry, Optical Society of America, *op. cit.*, pp. 12–13.

[38]*Ibid.*, p. 222.

[39]See, for example, Abbott, *op. cit.*, p. 24, and American Society for Testing Materials, *op. cit.*, p. 37, and A. Maerz and M. R. Paul, *op. cit.*, pp. 4, 11, and Judd, *op. cit.*, pp. 31–45.

[40]American Society for Testing Materials, *op. cit.*, p. 37.

The science of color seems to contribute its bit to the accumulating evidence favoring the field view and the implicated operational conceptions. Color scientists define color in various ways,[41] and each of these ways "may be correct for the specific purpose."[42] In fact, here as in other sciences, not fixed definitions but the ability to change definitions is what is sought. This process has brought the science of color into relations with an increasing number of other sciences in the physical, biological, and social areas.[43] And, as in other sciences, this process has advanced on the assumption that all is not given, that bringing things into new relations may enrich meanings, power, and (to use the older phraseology) "the properties that things possess."

These considerations may have implications for educational philosophy. They suggest that educational philosophy may gain insight and power by fostering closer contact and communication with other disciplines. Such communication may help us avoid making irresponsible statements, if irresponsibility is taken to mean a lack of harmony between words and the operations of those working successfully in the area to which the words refer, and if working successfully is taken to mean the refined ability to predict and control the phenomena being investigated.

Classical Realists like many other philosophers, are fond of being "objective" and "scientific." For instance, the author of the textbook which I have chosen as an example states that "the goal of science is precise understanding of the modes of changes in the natural world, and the aim of education is to get pupils to think of the natural world as much as possible as does the scientist."[44] Now, one commonly used method which would permit a person to make this statement and, at the same time, to present a picture of a world that most modern scientists do not recognize is to simply neglect the doings and findings of modern science. Then the speculative mode of thought engulfs or "explains" the scientific mode of thought. But ambiguity remains. In the case of our author, the ambiguity is clearly revealed in his use of the term "science" to refer, interchangeably, to Aristotle's world and method and to the world and method of modern scientists. By definition, such ambiguity does not facilitate clear thinking and orderly intellectual housekeeping.

The basic objects of most modern sciences are increasingly being studied by complex procedures which involve a complicated interplay of "facts" and "ideas"—including the interchange of roles of defined and undefined terms. And there is an increasing tendency for an advanced or advancing science to deliberately employ the ideas and operations of other sciences for both formal and material support. For instance, the color scientist does not define color by gazing intently at it and then mentally abstracting the "form"; he uses increasingly varied and complex instruments and procedures and he relates his work to that of physiologists, psychologists, geneticists, physicists, etc. Similarly, genes, electrons, fields of forces, and authoritarian personalities are not directly observable entities. They are instituted by artfully interwoven physical and mental operations.

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[41]Abbott, *op. cit.*, p. 24.

[42]Luckiesh, *op. cit.*, p. 34. For example, it is useful, for some purposes to distinguish the physical definition of color in terms of wave lengths from its appearance.

[43]Bouma, *op. cit.*, p. 6.

[44]Broudy, *op. cit.*, p. 133.

In this process there has developed a growing respect for the power of comprehensive theories which unify domains that originally seemed to be isolated from each other. When generalizations are systematically organized and related, tests of consistency, comprehensiveness, and simplicity are more easily made, and a richer crop of deduced consequences may become available for testing. Moreover, many of the generalizations may be more or less confirmed not only on the basis of induction by simple enumeration of own verifying instances, but also through the testimony of instances which are indirectly related to them by means of broader generalizations. Such systematic formal and material relations are essential in the determination of the scope and randomness (distribution over various domains of inquiry) of the evidence for the generalizations of widest application, the theory or philosophy of science.

But an educational philosophy which in *deed* isolates itself from other domains of study cannot enter this "house of science." It cannot participate in the shared extension and control of meanings. Such an educational philosophy will be quick to defend its own "autonomy." It will generally be forced to make many rationalistic assumptions like 1.) the relevance of evidence can be determined on *a priori* or purely formal grounds, and 2.) it is morally proper to make assertions about "reality" without indicating the acceptance conditions—the criteria for distinguishing confirmatory from disconfirmatory instances. Such a philosophy may claim to be empirical, but it remains basically rationalistic in its methodology. It is reminiscent of the effort made by Thomas Hobbes to establish a brutally mechanistic and empirical (associationist) psychology by means of introspection and deduction from his conception of the universal laws of nature.

It would seem that an educational philosophy which purports to explain some of the basic terms of other disciplines while at the same time isolating itself in other ways from these disciplines operates within a moral framework that finds no place for pluralistic controls, public verification, and the questioning of its own assumptions. The philosopher and scientist, C. W. Churchman, aptly points up some aspects of this moral predicament:

> For philosophy, having divorced itself throughout the ages from one after another of the special disciplines, has finally assumed the role, in modern times, of the grand evaluator of human activity. . . . We then have a situation in which one mode of inquiry (science) depends upon another (philosophy) for the criterion of evaluation, but not conversely. The result is that philosophy is able to slip away from any controls into assertions unchecked by outside criticism.[45]

It is no accident that educational philosophies of the kind indicated by Churchman have themselves generally taught that some values have an absolute character. It is no accident that the central moral problem for many of these philosophies has not been the problem of improving the process and products of moral inquiry, but that of defending and propogating the values on hand.

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[45] *Theory of Experimental Inference*, p. 189, New York: Macmillan Co., 1948.

A REJOINDER TO MR. LEVIT

BY HARRY S. BROUDY

I SHALL COMMENT ONLY ON THAT ASPECT OF MR. LEVIT'S PAPER WHICH SINGLES OUT MY BOOK AS A HORRIBLE EXAMPLE OF INSUFFICIENT PIETY FOR THE SCIENCES. I would like to assure the readers of that book that my devotion to science does not fall short of piety, although admittedly it falls far short of idolatry.

As John W. Yolton in a recent article* pointed out, problems and theories of perception take their shape from the ontological and methodological tools to which one is committed.

One such major difference in approach is between the epistemological and the psychological. The former begins with the kind of knowledge which we have via perception and tries to crystallize out propositions that would justify that knowledge. He quotes Price's remarks (*Perception*, pp. 10–11) to the effect that the data of psychology must be excluded from such an analysis because they do not concern the logical question of justification but that of cause, and the data of these sciences themselves rest upon perception and hence cannot be appealed to in an analysis of the validity of perceptual knowledge.

If, however, one holds to an ontology that posits a precognitive stage of reality out of which subject, object, and all distinctions emerge or become specified by inquiry, then psychological descriptions of this precognitive reality become relevant to a theory of perceptual cognition, albeit Price's stricture still holds. The theory tells us how we come to make the distinctions we do make in our developed knowledge but not whether we are justified logically in the making of them.

It should be clear that the statements quoted from my book as horrible examples are epistemological in the sense above described. They are not psychological, hence much of the quotation from the color psychologists is irrelevant to it.

To put it differently: The epistemological question is: What must I infer about the elements and relations among mind, body, and object in order that "The fire hydrant is red" is a case of perceptual knowledge. The psychological question is: What series of events result in the sort of experience described by me as: "The fire hydrant is red?"

There is no law compelling Mr. Levit to be interested in epistemological questions, but neither is there any law forbidding such an interest on the part of anyone writing on the philosophy of education. Actually, whatever psychology the book propounds is in Chapter 8 where something very close to Gestalt theory is used to characterize the learning process.

The admonition in the latter part of the paper to modernize my science to conform to my avowed respect for it lacks point for the reasons given and needs no further comment.

HARRY S. BROUDY is a Professor of Education at the University of Illinois.

*"Philosophical Realism and Psychological Data." *J. Phil. and Phen. Res.*, 19: 4 (June 1959), pp. 486–501.

EDUCATION AND THE NEW SCIENCE

BY VERN M. PINGS

THERE ARE TWO BELIEFS WHICH UNDERLIE THIS PAPER. The first shows indebtedness to Dewey's philosophy. The process of knowledge acquiring, or simply, inquiry, has a direct bearing on education. It is the results of inquiry which forms, to a great extent, what the educator deals with in teaching. On occasions the only way a teacher can convey the results of inquiry is to relate the sequence of events which produced these results. Further, one of the functions of education is to assist students in obtaining attitudes which give them the confidence to define and solve problems for which no automatic solution is available. Inquiry is not a haphazard affair and consequently any insight the educator may have in the process will help him to understand not only the content of his subject field, but also the proper conduct of educational practice.[1]

The second belief concerns the significance of what is generally referred to as "science." Educators who believe that one way of life is preferable to another are forced to recognize that science has played an important part in all modern cultures. To maintain their belief, therefore, they must support the scientific theories and philosophy which support their beliefs.[2] The general attitude of science, or more specifically, what the individual scientist accepts as scientific knowledge, directly affects our cultural existence which of necessity involves the educative process.

De Broglie, Heisenberg, and others have claimed a revolution has occurred in physics within the last generation.[3] The revolution refers to the way the physicist looks at "knowledge." Techniques of investigating nature have surely changed, but techniques of science are nowhere the same: not only do they differ between sciences but between problems in the same field.[4] Scientific method, in its most general meaning, nevertheless, is everywhere the same; it involves the process of making logical inferences from data *provided* and tested by experience. The revolution that has occurred revolves around certain aspects of the significance of the result of applying this method. "Facts," for example, are data only if they can be related to some "structure of reality" or picture of the world.[5] To state it in more usual terms, facts are data *for* hypotheses; without this picture the facts would have no scientific significance. A theory is not just a notational system

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[1]Not all educators are convinced of the importance of epistemological considerations to education: ". . . I must repeat that the crux of the problem of educational theory and practice will not be found in metaphysics, epistemology, or theology." (W. Stanley. "Current Tasks of Educational Philosophy." PDK. 30: 11–16, (Oct. 1958), p. 12.

[2]*Cf.* J. Gallant. "Literature, Science, and Manpower Crisis." *Science.* 125: 787–791, (April 26, 1957).

[3]*Cf.* L. de Broglie. *The Revolution in Physics.* (New York: Noonday Press, 1953); W. Heisenberg. *Physics and Philosophy, the Revolution in Modern Science.* (New York: Harper, 1958).

[4]A. Kaplan. "Sociology Learns the Language of Mathematics." *Commentary.*

[5]Heisenberg, *ibid.*, p. 58.

that "represents" the actual events of nature; to be significant the notational system must be accompanied by *statements about* the facts.[6] To the modern physicist scientific inquiry must take into account (1) that data is *provided* and (2) that to have meaning the results must contain *statements about* the events of study. These two conditions cannot be determined solely from the experiments themselves. The modern physicist must go beyond his experiments in order to communicate his experiences. Or, as Margenau tell us, metaphysical principles are an important part of the procedures of the physicist which go into defining the results of our study of nature.[7]

To delineate the attitude which is here called the "new science", it will be contrasted with the 19th century attitude which modern physicists have generally called "classical science." The 19th century, for whatever reasons for its development, might be characterized, as Dunavon writes, as the "age of Rationalism and the quantitative method. Whatever was measurable or quantitative was real; all else was unreal and therefore beneath serious consideration . . . intuition and emotion came to be disparaged as minor attributes of human nature."[8] Newton's theories of motion had provided the physicists with all the "causes" for the existing dynamic conditions. It was the prerogative of man to *know* the "causes" of events in the universe. The fact that they were successful in predicting future states from the few "causes" they had isolated supported the belief that not only was nature rational, but simple. Therefore, if man could make one precise measurement, he could *know* all the relationships for the future and he could reconstruct the past. The 19th century materialist did not necessarily believe that the universe could be organized into an heirarchical order—for this required "value" judgments—but he was convinced that each element of the universe was related to all other elements; everything had its particular place. The process of measuring was independent of this order. Measurement meant objectivity—objectivity which was above and beyond the subjectivity of any one individual. Thus by proper measuring, man could *know*, not just *know about* the universe.

Although the classical scientist recognized that he could never make the entire universe an object of study, he could know it by studying isolated closed systems which could be combined by the proper operations to give detailed information of the universe as a whole.[9] The 20th century physicist was forced, albeit reluctantly, to abandon this version of inquiry. The classical scientist dealt with objects that he could sense directly with his own distance receptors.[10] Such defined objects of study were the basis of "classical science." With the development of instruments, which were both telescopic and microscopic, to extend the distance receptors of man, new objects of study became defineable which presented problems

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[6]*Cf.* Kaplan, *ibid.*; P. Bridgman. *The Nature of Physical Theory.* New York: Dover, 1936, p. 60.

[7]H. Margenau. *The Nature of Physical Reality: a Philosophy of Modern Physics.* New York: McGraw-Hill, 1950, p. 81.

[8]R. Dunavon. "The Revolution in Bohemia." *Sat. Rev.* Sept. 6, 1958, pp. 14–15.

[9]*Cf.* P. Bridgman. *The Nature of Thermodynamics.* Cambridge. Harvard University Press, 1941, pp. 77–78.

[10]Although astronomy has been a subject of study certainly since recorded time, it must be remembered that until the 16th century all information of the heavens was interpreted from the information received by the unaided eye.

of explanation not encountered when the scientist dealt with man-sized objects of study. Einstein's theories of relativity were an attempt to reconcile the distortion of events (from the classical point of view) when objects of study involve great distances and velocities. The atomic physicists also met epistemic difficulties because their measurements seemed distorted when compared with the classical picture of the universe. The conflicts they have dealt with has prompted Newman to state that "physics having suffered certain metaphysical relapses can survive only by swallowing entire jugs of wholly contradictory measurements."[11] Both Einstein's theories and Heisenberg's uncertainty principle deal with the problem of simultaneous knowledge about objects of study. To establish the simultaneity of events for large distances and velocities requires that we construct an abstract space by mathematical formalism which, reduced to man-sized events, is ordinarily indistinguishable from the classical theories of simultaneous measurements. According to the uncertainty principle, it is impossible to obtain certain simultaneous measurements of atomic phenomena because the instruments that man must use are so large compared to the object measured that an uncertainty is inevitable. Man has no infinitesmals available, even though Bohm postulates their existence,[12] which can be used to measure the atomic realm. However, returning to the man-sized world, these quantal effects are essentially undetectable.

In atomic physics the question had to be asked, what is it then that the physicists deal with when they use uncertain information to construct their theories?[13] A theory or hypothesis to be empirically significant must be formulated in such a way that it has logical coherence to make it communicable.[14] Furthermore, it must be capable of corroboration or refutation. The classical thermodynamicist had already recognized that he was incapable of establishing a theory beyond every possibility of doubt by any finite number of observations. But man, after all, is only capable of making a finite number of measurements.[15] In dealing with atomic particles the quantum physicist must deal with systems that are irreversible.[16] From the nature of the procedure of making measurements of atomic systems the physicists had to admit they were dealing with probabilities of occurrences because not every state of affairs gave confirmatory evidence for a given theory; observable states of affairs could be found which would contradict the theory. A theory, then, is an idealized scheme showing the relationships between *selected* phases of an event. The confirmation of this scheme can only by approximated by experiment.

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[11]J. Newman. "Commentary on the Founder of Psychophysics." *The World of Mathematics.* J. Newman, *ed.*, New York: Simon & Schuster, 1956, V. II, p. 1147.

[12]D. Bohm. *Causality and Chance in Modern Physics.* London: Routledge and Kegan Paul, 1957.

[13]Ernest Nagel would not agree that this is a question for the physicist to ask: ". . . the analysis of the meaning of probability propositions belong to logic, not to physics or metaphysics; and indeed I think that at no point in that analysis or consideration is a prior decision required about the universality of causal determination or the presence of absolute contingency." ("The Meaning of Probability." *J. of the Am. Stat. Assoc.* 31: 10–30, Mar. 1936, pp. 18–19.

[14]Paul Halmos reminds us that mathematicians often jump to bold conclusions inductively: "It may then be a difficult task to prove them, but often the purely deductive arrangement of the work serves more to communicate facts than to establish them." (*Sci. Am.* 199: 66–73, Sept. 1958, p. 69.)

[15]*Cf.* E. Schrödinger. *Science, Theory and Man.* New York: Dover, 1957, pp. 79–80.

[16]An irreversible system may be duplicable, but its previous state cannot be determined from a set of measurements as is the case in most classical mechanical systems.

The controversy in physics today lies not in the experimental data, but in the "meaning" of the theories constructed from the data. It was Einstein who first began to define the nature of constructing a theory from empirical data. Only those elements of a situation for which we have direct observable measurements (or only those capable of measurement) should be used in formulating a physical theory. But if only certain elements are selected of a system for constructing a logical theory, is this theory, then, a picture of what actually happens? If it is not, this seriously questions the postulate of the classical scientist that it is within man's competence to *know* the "causes" of the progression of events.

The Copenhagen school of physicists have accepted the fact that man is incapable of "knowing" actuality, or the real content of nature. If he confines himself to using only the empirically verifiable data for the construction of his theories, these theories at best can give us pictures which are complementary to actuality, and they are not descriptions of actuality itself. Bohr's principle of complementarity describes the limitations man must encounter in any inquiry into nature.[17] These limitations are fundamental to man; they cannot be argued away. In the process of inquiry man must select aspects from the totality of the universe—he never studies the universe as a whole. The very process of selecting something "out of" the ongoingness of nature for observation alters its nature. To use existentialist terms: the delineation of an entity or individuality from the universe always means estrangement from the universe. Further, during the process of inquiry either the object of study itself is changed during the process as is always the case with atomic phenomena, or the orientation of the observer undergoes an alteration towards the object of study because of the information he obtains. Thus, even though man is capable of collecting data in the atomic realm or on astronomical distances and velocities through instruments, the ordering of this data must be formulated using man-sized analogies and pictures to make it communicable.[18]

If it is true that all constructs and theories are man-made pictures which are complementary to actuality, that which man calls knowledge becomes an imaginary mist and the physicist, as Einstein writes, is dueling with ghosts.[19] The principle of complementarity, however, gives a decisive answer to this question of the nature of these man-made structures of reality. There is nothing ambiguous or uncommunicable about them because they are rooted in man's own efforts and activities of inquiring into nature. The act of observation is a fundamental aspect of what we come to recognize as scientific knowledge. This is the epistemological paradox that research in atomic physics has brought to light: in inquiry the scientist must make two choices, (1) the delimiting of an object of study, and (2) the selecting of instruments to study the object. While the choices available may be finite, what is finally chosen nevertheless determines the kind and quality of knowledge that will result. These choices cannot be made by the

[17] *Cf.* N. Bohr. "On the Notions of Causality and Complementarity." *Dialectica.* 2: 312–319, 1948.

[18] It is recognized that other sources than the act of measuring and interaction with nature may be a source of knowledge. However, since we are concerned primarily with knowledge as it may affect educational processes, we are necessarily limited to that which is communicable; all such knowledge must be reducible to analogies within man's direct experience to be truly communicable.

[19] A. Einstein. "Elementare Überlegungen zur Interpretation der Grundlagen der Quanten-Mechanic." In *Scientific Papers Presented to Max Born.* New York: Hafner, (1953), pp. 35–40.

empirical data alone. The acts and decisions of the scientist are not independent of what we know about nature. Whether these conditions are requisites of all inquiry, or even of scientific inquiry, cannot be definitively decided by generalizing from the research of the quantum physicists. If, however, it is accepted as a valid attitude toward knowledge acquiring and interpretation, it could have direct effect on educational techniques and research.

Content of education. In this age of rapid change, it is a challenge to educators to decide what the student must learn. The number of "facts" that have been collected by the various disciplines are so large that it cannot be expected that the student will learn them all. Even if it were possible, what would it mean to know all the available facts, for as Eddington wrote, "in regards to the nature of things . . . knowledge is only an empty shell—a form of symbols. It is knowledge of structural form, and not knowledge of content. All through the physical world runs the unknown content, which must surely be the stuff of our consciousness. Here is a hint of aspects deep within the world of physics, and yet unattainable by the methods of physics."[20] Education, it would seem, should be concerned with teaching the student about the content of nature and to prepare him to deal with it. Yet there seems to be no picture available or a "structural form" which can convey the actual content of nature. On the other hand, if it truly is a prerequisite of inquiry, as Heisenberg suggests, that we have a picture of nature before we can ask questions, then we must be satisfied to provide students with images of nature which are only complementary to it. By accepting this epistemological limitation of the quantum physicist, we could keep clearly in mind that what is taught are man-made structures; they are the result of man's efforts to order a selected set of experiences which man himself has chosen to study. Since they are man-made, we cannot assume them to absolute, actuality itself. By content of education, then, is meant what the proponents of the Discipline of Practical Judgment refer to when they say that instruction cannot deal with facts alone but must pay attention to the "real context out of which the broader meaning and significance of . . . facts arise."[21]

The Physical Science Study Committee is working out a course of study for secondary schools with the hope that it is possible to make the content of the physical sciences more understandable rather than just teaching the applied aspects which are pertinent to a particular profession or technology.[22] Michels

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[20]A. Eddington. *Space, Time and Gravitation.* Cambridge: University Press, 1920, p. 200–201.

[21]National Society of College Teachers of Education, Yearbook. No. 28. *The Discipline of Practical Judgment.* Ann Arbor: Ann Arbor Press, 1943, p. 46. S. B. Ingram, director of education and training of the Bell Telephone Laboratories writes that the electrical engineer's world as it exists today ". . . is a research and development world. It is a digital world. It is a feedback world. It is a statistical world. It is a systems engineering world. And, finally, it is scarcely a world at all because it is only an arbitrarily and perhaps unrealistically defined segment of the real world of nature . . . Young engineers enter industry rebelling at the thought of a dirty, statistical, real world because it is not the nice regular, fictitious one they have learned to accept in textbooks. (An Electrical Engineer's World—1957." *Elec. Engg.* 77: 181–184, 1958.)

[22]Their purpose is actually broader: "Physics is the most basic of natural sciences. For this reason, the study of physics is essential to the education of all of the population. The future rests not so much on the number of engineers and scientists produced each year as it does on the intellectual and cultural climate in which they work, and this, in turn, will be determined by our success or failure in making physical science a significant part of Elementary Physics." (*Sci. Am.* 198: 57–64, Apr. 1958, pp. 57–58.)

gives two reasons for the failure of the physics courses in our secondary schools. Our conception of physics is tied up with tradition, economic pressures, and mistaken ideas about the nature of science. Textbooks are written which hinder the teacher rather than help him to convey the content of physics; oftentimes they are written for students who are planning for a career in engineering. This presents physics as belonging to a particular kind of world when in fact it is only one of many possible worlds for the structure of knowledge that is recognized as physics.

Another facult is breaking physics into topics or "units." Although basically this is a sound pedogogical idea so that students are not confused by too many facts or concepts at one time, this separation of events robs them of meaning in relation to the "content of nature." Michels illustrates this last fault in the teaching of physics by using an example of Ohm's law. This law holds only for special classes of electrical conductors (e.g., metals) and it is the failure of this law to operate which has made all of modern electronics possible.

> Yet the typical introductory physics course leaves a student with the firm conviction that Ohm's law is one of the most basic principles of physics, or at least that he will not pass his final examination if he cannot substitute numbers in the formula: $E = IR$. If he remembers that E is a voltage, I is a current and R is a resistance, he will be able to arrive at the correct answers to conventional examination questions. But if he tries to apply Ohm's formula to any circuits other than the simple ones in which he has been drilled, he will probably go far astray, for he has learned only the letter of the law, not its meaning.[23]

If the dictum of the epistemology of quantum physics, i.e., the *raison d'être* of knowledge is man, but at the same time all communicable knowledge is an *être de raison*, can be generalized to cover other fields, educators must take care that they do not provide students with only one picture of nature or one method of studying nature. This would give a distorted approach to an appreciation of what Eddington referred to as the content of nature. Since communicable knowledge depends upon some picture of nature, the curriculum of physics, if not for all subject matter, needs to be evaluated in terms of its ability to give students a prescience of the content of nature and not just drill in the operation of the elements of which this man-made picture is composed.

"Facts and values." The epistemology of quantum physics warns us that the structures of reality we must use to convey and understand experiences, at least in the atomic realm, should not be mistaken for actuality.[24] But what about the individual experiences that go into formulating a structure of knowledge? The quantum physicists repeatedly emphasize that the decisions, frame of reference, and actions of the experimenter must be included in any description of an experi-

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[23] *Ibid.*, p. 61.

[24] Although there is danger in generalizing the attitude of inquiry of the quantum physicists, it is not the purpose here to investigate all disciplines to determine to what extent the actual techniques and methods of the quantum physicists are applicable to them. But it should be noted that the reason for the epistemological problems arising has been the experience of the "quantal effects" in observation. These effects are observable not only in electronics but in many active areas of research in biology from photosynthesis to the process of thinking itself. In those areas of research where these effects are evident, similar, if not the same, epistemic questions have to be asked.

ment to make it significant. If decisions of individual scientists are an important aspect of knowledge acquiring, then judgments are required. The classical scientist had insisted that although he may have had to make judgments, they had nothing to do with any human value. For if this were the case, the judgment cannot be scientific. To avoid the accusation that value judgments were made, the scientist was reluctant to leave his field of competence. Maybe, as Stevenson writes, a scientist ought not to make value judgments when he *speaks* as a scientist.[25] But when a scientist acts as a scientist, i.e., when he inquires into the operations of nature, is he capable of being free from any value judgments? The quantum physicist would say, "No."

Each fact established by scientific procedures carries with it a value situation which cannot be separated from the fact without destroying it. It is the "value" of the situation which makes it possible for an individual to objectify himself with respect to his object of study. Without this accompanying value, the individual could respond to the situation only in terms of the pure physical motions of the elements involved. The subjectivity of a perception cannot be separated from the objectivity of the event without destroying either the identity of the knower and/or the significance of the event.

In the procedure of making measurements on atomic systems, the uncertainty principle limits the knowledge that can be obtained. This situation "may be expressed in concise and general terms by saying that every experiment destroys some of the knowledge of the system which was obtained by previous experiments."[26] Thus to identify a particular fact of experience the position and intentions of the experimenter must also be given in order to place a limit on the destroyed knowledge. The process of knowledge acquiring cannot be relieved of the onus of the effect of observation. Communicable knowledge requires that some interaction occur between the knower and that which is known. Human knowledge therefore in the atomic realm has a certain quality of privateness and subjectivity, for without the activities of the human observer the knowledge redeemed from these activities could only be created by the intervention of the observer. There is something peculiarly and irrevocably human about the results of inquiry. This is decidedly a different situation from the classical attitude.[27]

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[25]C. Stevenson. "The Scientist's Role and the Aims of Education." In. I. Scheffler, *ed.*, *Modern Readings, Phil- and Education.* Boston: Allyn & Bacon, pp. 43–50.

[26]W. Heisenberg. *The Physical Principles of the Quantum Theory.* Chicago: University of Chicago Press, 1930, p. 20. Brillouin using concepts of information has generalized the uncertainty principle to show that the act of observation always increases the entropy of a system which of course destroys the order of the system. (L. Brillouin. *Science and Information Theory.* New York: Academic Press, 1956, pp. 299–344.)

[27]However we should not make the mistake of thinking that knowledge acquired from observing man-sized or larger events does not carry with it the effect of observation. We still use various instruments which demand we make finite measurements. The precision of these measurements are precise with respect to what? Is it our instruments or is it the object of study of which we have more precise knowledge? To say that it is the object of study of which we have more precise knowledge would require us to *know it completely* before we could make such a judgment. No responsible scientist will say that he has full knowledge of an object of study by a finite set of measurements or by deductive inference from theoretical knowledge. The question of precision therefore rests on comparative measurements with respect to what man "thinks" the universe *is*.

To make clear what is meant by the statement that "values" accompany facts, let us re-examine the process of inquiry in atomic physics. While the number and quality of experiences that can be created in interactions with atomic systems for a particular epoch may be finite, there are still enough possible experiences so that they cannot be grasped at once by any one individual. Consequently he must choose a certain number of them and give them a significance other than just their existence. To use an example which was fundamental to the foundation of quantum physics, it was known since 1859 that each element produced its own kind of spectrograph. But in 1916 Bohr put a new value on this fact. He said that these spectrographs could provide us with information about what is going on inside the atom. The making of spectrographs did not change—it was essentially the same in 1859 as in 1916. What did change is the "value" placed on the empirical relations of producing spectrographs. This is not confined to just quantum physics: Einstein asked the question whether the mass due to inertia and that due to gravitation were really different. He assumed they were the same and as a result was able to construct a theory which combined them both under one concept. Surely the "fact" of mass has not changed because Einstein placed a new value or a different significance to it. The reason for stating that each fact has an accompanying value is that in the case of the spectrographs there is no way to "prove" that they really are a record of changes of position of "orbiting electrons". With respect to communicable knowledge, within the bound of physics, the constant ascepts are man himself and the ongoingness of actuality. All else becomes constant by mutual agreement of man.

When it is the teacher's task to educate the student in the "facts" of science, the attending values of these facts must also be given if they are to be understood in their scientific sense.[28] The empirical relation of knower to his object of study may always be duplicable, but the meaning or value he places on this relationship may change as inquiry progresses. Atomic physics has undergone many re-evaluations of the "facts" of which it is composed; e.g., the atom was thought to be indivisible; the electron was thought to be the "carrier" of electricity. Each of these changes of meaning requires looking at the facts from a different view. to force all experiences of interaction within one "set" of values reduces the possibility for inquiring into the content of nature. In summary, then, when we define our position and decisions in terms of man-sized objects and events, the sensory situation is duplicable. But what is selected for this sensory experience as being significant is still a matter of choice of individuals and its significance cannot be communicated without the values of the knower or experimenter intervening. Each situation carries with it a variety of possible interpretations depending upon the knower and consequently we must be prepared to deal with these possibilities as a fundamental part of knowledge. They are too important to ignore in the constantly changing "scientific" picture of nature.[29] Even though

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[28]Conant has emphasized that the proper way to teach the results of science is through an historical account of its development because only then can the complex details which surround the oversimplified descriptions be understood; only an historical account can show "the stumbling way in which even the ablest of early scientists had to fight through thickets of erroneous observations, misleading generalizations, inadequate formulations, and unconscious prejudice." (J. Conant. *On Understanding Science.* New Haven: Yale University Press, 1947, p. 15.)

[29]The danger of forcing the interpretations of the "facts" of experimentation into one set of values can perhaps be illustrated by the international scientific scandal of Lysenkoism.

modern physics may be subject to "metaphysical relapses," as Newman states, the choices and decisions that a scientist must make in his descriptions of his research are a topic which cannot be glossed over by educators who are preparing individuals to enter this community of scientists.

Educational research. How the attitudes of the quantum physicists can be applied directly to the techniques and purposes of educational research cannot be safely determined until or unless their attitude can be generalized and shown to be significant for all research. Easley has pointed out there has yet to be produced a systematic analysis of the scientific method.[30] The revolution in physics is not so much in the technical methodology of science, rather in the way scientists view the results of their research. It has put limitations on how the scientist can go about constructing scientific knowledge. Consequently for any systematic analysis of scientific methods, these limitations must be reckoned with. Should they be shown to be significant for science in general, it would perhaps alter the whole presentation of the subject matter of science.

However until the significance of this revolution can be evaluated, there are two specific suggestions for educational research. The first of these is the problem of presentation of the data, facts, and theories of disciplines where quantal effects are observable in objects of study. So far the best information that can be supplied concerning these objects of study is probability ratios. The subject matter of most disciplines dealing with probabilities rather than with concrete predictable events is confined to college courses. But as research continues in the microcosm more and more of such relations will be discovered. Even though it may take many years before such relations will have to be studied in secondary schools, the curriculum of the secondary schools will have to begin to prepare students to handle them in later work. One such effort of which the writer is aware is in mathematics. There is an endeavor to present the meaning of functions as a relation between "sets" of finite measurements rather than one in which the measurements are continuous by virtue of the fact that the measuring rods are infinitely divisible.[31] What specific changes in the curriculum and in techniques of teaching such an orientation demands can only be determined by study.

The second suggestion the attitude of the new science may have to educational research is directed to the question of what it means to "know." As man begins to broaden his knowledge of the operations of nature, our educational experiences are going to have to become increasingly involved with symbols. There is simply not time to teach a student by direct experience the things he needs to know to be able to participate in the large world he must face as an adult. The new science may therefore give leads into the process of "facilitating the formation of explanatory conceptions and theories" which Dewey felt was the essence of what might be summed up as the "scientific method."[32] While the new science has not given definitive answers of what concepts and theories *are*, it has demonstrated how they are related functionally to the process of inquiry in quantum physics, and, to a

(*Continued on page* 119)

[30] J. Easley. "Is the Teaching of Scientific Method a Significant Educational Objective?" In I. Sheffler, *ed.*, *op. cit.*, p. 174.

[31] To be published in the National Council of Teachers of Mathematics Yearbook.

[32] J. Dewey. *How We Think.* (Boston: D. C. Heath, 1933), p. 171.

LEARNING THEORY AND OBJECTIVE PSYCHOLOGY IN EDUCATION

BY WILLIAM D. SPEARS

IF A LAYMAN WERE TO TAKE HIS FIRST LOOK AT EDUCATION TODAY, HE WOULD BE PARTICULARLY SURPRISED THAT EDUCATORS AS A WHOLE KNOW SO LITTLE ABOUT LEARNING THEORY. Perhaps there would be some justification for the scathing criticisms that would follow. Yet, when education looked to psychology for guidance some years ago, the embryonic learning theories of the day proved inadequate: The early theoretical concepts were unsuitable as working hypotheses.

Hence education has gradually dispensed with learning theory as such and has emphasized instead the mental hygiene aspects of psychology. Mental hygiene in turn grew into personality, especially motivation, theory. As Combs stated, "Modern education has shifted its emphasis from subject matter to children, from processes to people. As a result, the theory of greatest use to educators is not learning theory but personality theory."[1]

This paper is not intended to belittle the contributions of personality psychology to education, but to point to a maturing learning theory that could be at least as useful. Unfortunately, since most of the rigor of scientific psychology has been lost in current educational psychology, many students do not have the conceptual tools necessary to understand learning theory. It is hoped that this paper will provide some understanding of what scientific psychology is all about. I shall attempt to explain in general terms what a learning theorist is trying to do and how he expects to accomplish it. While this effort is not likely to silence the critics, perhaps the careful reader will at least see some sense in Kenneth Spence's humble statement that we cannot know whether there can be a science of behavior until we try to construct one.

The Nature of Theory

The first task is to examine the nature of scientific theory itself. A theory is concerned with processes, not things. More specifically, a theory is concerned with observations. I cannot conceive of an equation in nature, or even a law in nature. When an apple falls, it is not obeying the law of gravity; it is just doing what apples do under the circumstances. The law of gravity, and the equation specifying the quantitative relationships, are products, and achievements of human thought. It is doubtful that a scientist ever discovers laws in the usual sense. He invents laws. Let us examine his creativeness in more detail.

Analysis. Science is analytic. The key concept in science is *reduction*, or the representation of a variety of complex phenomena in terms of fewer, simpler phenomena. The final products of analysis are conceptual units, and the ultimate

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[1]Combs, A. W., "Counseling as a Learning Process." *Journal of Counseling Psychology*, 1954, 1, pp. 31–36.

aim in theorizing is the reduction of several conceptual units to a single such unit. The concept of energy in modern physics approaches this ideal.

The reluctance to accept reduction in psychology appears to stem from confusion as to its meaning and purpose. Consider the argument that the whole is more than the sum of its parts, which supposedly precludes analysis. One may grant that this statement is a truism in a metaphysical sense, but it is not a permissible statement in analysis because the term "parts" has no meaning. Parts have no existence separate from an analytical scheme. One cannot say simply that A is a part of B. He must specify the system of analysis used in dissecting B to find A as well as the inter-relations of A and other parts uncovered by the analysis. Parts do not come individually; they come in structured sets. Hence the nature, or rather meaning of part A depends upon the system of analysis employed, and part A as such may not appear in other schemes.[2]

Thus the assertion that two halves of an apple can never make a whole apple, while true in a metaphysical sense, is not necessarily valid as a scientific statement. Science is not concerned with whole apples. The systems of analyses used specify functions or effects of apples, not their metaphysical unities. Do the halves differ from the whole apple in total nutritional value? Do they differ in total weight?

Furthermore, while the halves are additive parts of the whole insofar as these questions are concerned, they are not additive in relation to consumer appeal. Few of us would select half-apples from the produce counter in a grocery store. In this case the system of analysis must include human motivation as a variable, and the halves would acquire new meanings as parts.

This discussion of analysis may have more meaning if we pause briefly to dispense with a poorly defined argument in psychology. Some writers appear to believe that embracing a *field* concept relieves one of the necessity to analyze, and this belief is supposedly grounded in the formulations of field theory in physics. The physical field, however, is as much an analytical concept as is motion in Newtonian mechanics. When a phenomenon is analyzed according to Newtonian principles, the end products are positions and velocities of particles. Field theory reduces these same phenomena to electromagnetic potentials present at each point in a three-dimensional space at a given instant of time. The difference between classical and field theory in physics is not whether analysis is involved, but the end products of analysis. If a psychological field is to support a nonanalytical holism, it will have to be defended on its own merits, not by reference to physics.

In summary, the scientist does not ask whether a given phenomenon is lawful, but, "How can I arrange my experiences so that my experiences will be lawful?" What system of simple and simplifying experiences will enable us to predict a variety of phenomena from other phenomena? What concepts should we select, not for their truth, but for their utility? We seek related observations, not related occurrences in the external world. Whether there can be related observations without isomorphic occurrences in the external world is not necessarily our concern. The point is that modern science as formulated is built around

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[2] *cf.* Eddington, A. S., *The Philosophy of Physical Science.* (New York: The Macmillan Company, 1939), pp. 118 ff.

experiences, and that there is an unlimited number of sets of experiences from which we may choose. The milestones in the history of science are not so much discoveries of new laws as inventions of new frames of thought.

Data language. Let us turn now to a basic compulsion of scientists: A theory must be grounded in empirical data. Most modern philosophers of science hold that, while logic leads to certainty within a logical system, any assertion is necessarily uncertain to the extent that it contains empirical references.[3] Since a theory is constructed to predict external phenomena, it must stand empirical test. It is useless unless it can be related to observations.

Hence the terms in a scientific statement must be reducible to data, and a scientific statement must assert something about data. What, then, is the nature of data? The answer to this question requires a threefold distinction in the process of observing. *Behavior* may refer to occurrences in and of a subject; *raw data* to those occurrences selected for analysis; and *data* to the interpretative meaning of the selected observations within a theoretical structure.[4] Stated differently, we note a behavioral occurrence, make qualitative and quantitative judgments of *some* aspects of it, and then relate the judgments to a conceptual scheme. The third stage in this process broadly determines the nature of the other two. The axioms or postulates of a theory limit the kinds of empirical information that can be used. For example, the principle of contiguity, which is fundamental to almost all of psychology, requires that observations be reducible to contemporary occurrences. Also, the data of molar theories of behavior are acts (*e.g.*, goal attainment) while molecular theories deal with individual muscular responses.

In other words, the bare scientific fact is a myth. Facts must be reduced to observations, and the set of the observer determines what he sees. A fact must be interpreted to have meaning, and interpretation is possible only within a frame of reference. In choosing premises and rules for manipulating terms the scientist invents laws to describe what he observes, and in part to determine what he observes.

Reduction in principle. Some scientific statements can be reduced to data only in principle. Often one must specify a set of hypothetical observations when making a statement. To use Eddington's example, when an astronomer says that it is 239,000 miles to the moon, he means that if 239,000 x 1760 yardsticks were laid end to end, they would extend from the earth to the moon.[5] The statement that two ideas are a million miles apart can have no precise meaning, however, since we cannot conceive even hypothetically of 1,000,000 x 1760 yardsticks separating two ideas.

The meaning of a scientific statement is not weakened by reduction only in principle since the hypothetical observations may be defined. The validity or

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[3]Hempel, C. G., "Geometry and Empirical Science," in J. R. Newman, ed., *The World of Mathematics*, Vol. 3, (New York: Simon and Schuster, 1956), pp. 1635–1646.

[4]Coombs, C. H., "The Scale Grid: Some Interrelations of Data Models." *Psychometrika*, 1956, 21, pp. 313–329.

[5]Eddington, A. S., *op. cit.*, p. 12.

empirical justification of the statement cannot always be determined, however. There will never be enough physicists to observe and prove empirically that the trajectory of a bullet is the resultant of the motions of subatomic particles. But it can be shown whether the equations describing the path of the bullet are deducible from the formulations for the smaller particles. In such an instance the logical processes constitute a reduction in principle since they specify in effect hypothetical observations of each particle. If the two systems of laws are consistent, the more abstract (in this instance quantum) laws provide a useful check on the molar laws. When trouble arises in the latter, the difficulty can be isolated for microscopic (logical or mathematical) examination. A reduction of insight to learning sets, for example, can be quite useful in understanding certain aspects of the problem solving process.[6]

The experiment. The experiment is perhaps the most misunderstood tool of science. There seems to be the idea that a rigorous statement must be small in scope, that experiments are concerned with data *per se*, not data defined in a conceptual framework. If one should ask an educational psychology class to think of some learning problems suitable for experimental study, the answer would usually be several maze problems. But typically, each of their studies requires a different maze! The students are surprised to learn that most of the maze studies that have been run, and there have been thousands, could have been run on a simple T maze. The impression one derives from the students is that we determine how rats learn mazes. Unfortunately this notion is not restricted to educational psychology students.

The secret of successful experimentation is not the task given the subjects, nor the analysis of results, but whether a theoretical structure entails a specific outcome. How often has a research consultant been confronted with, "This may not be statistical, but it is the thing that is important," or, "I'm interested in these more important judgments that cannot be observed in data?" How does one point out tactfully that the weakness is not in statistics, nor in systematic observation, but in the lack of logical clarity and conciseness of the ideas to be studied? The main hitch in designing a study is whether the investigator really knows what he is trying to establish and whether he is willing to go to the trouble to test it.

A common confusion concerning the null hypothesis illustrates this misunderstanding. We spend time and money to test, for example, whether teaching method A is superior to method B. Then in the analysis of data we assume that there is no difference between the two methods. Why? Because we prefer to be conservative? No, but because there is no rigorous way to test the hypothesis that method A is superior. It is not a precise statement. A different analysis would be required for each of the (usually) infinite number of possible magnitudes of differences. We can, of course, test an hypothesis of the form, "The mean score of the group taught by method A will be five points higher than that of the group taught by method B." But, some reply, of what use is statistical analysis if one can examine only specific, not general statements? A general statement can and must have a specific meaning for a given instance if it is to be useful in science. Otherwise no definitive test is possible.

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[6]Harlow, H. F., "The Formation of Learning Sets." *Psychological Review*, 1949, 56, pp. 51–65.

Some uncertainty as to expected outcomes is characteristic of most educational and psychological research. Hence, we adopt a round-about way of establishing statements. The null hypothesis is designed for this purpose. The two statements, "The true difference is zero," (null hypothesis) and, "The true difference is not zero," (experimental hypothesis) are logically exclusive. Establishing the validity of one entails a decision concerning the other. Unlike the experimental hypothesis, the null statement is exact and can be tested rigorously. If it is rejected, the alternative (experimental) hypothesis may then be accepted. And to re-emphasize an earlier point, unless the experimental hypothesis is stated in terms reducible to data, providing precise empirical meaning, no experimental test can establish or deny it.

The problem then is to design a study, *i.e.*, ask nature a question, in such a way that a decision concerning a statistical hypothesis entails a decision about the experimental hypothesis. The experimental hypothesis in turn should have been derived from a more general conceptual framework which includes a variety of phenomena. If such is the case, testing the null statement can be tantamount to testing the entire conceptual framework and its applications. The null hypothesis, like a steak knife, is a tool with which to get at the meat.

This discussion of experimental procedure is not to imply that research can function only when hypothetico-deductive foundations have been laid. There is certainly a need for exploratory studies, not to mention numerous other problems begging for answers. The point is that data *per se* are never meaningful, and that answers to empirical questions can be forthcoming only when the questions are asked properly and the data are collected in such a manner as to give them meaning.

FORGOTTEN PRINCIPLES OF SCIENCE

Let us turn now to the three most frequently encountered objections to learning theory in education: (1) theories are impractical; (2) experiments are conducted in artificial situations that have little or no relationship to the circumstances of everyday life; and (3) formal learning theory depends to a great extent upon animal studies, and not all people are rats. To answer these objections we shall examine three well understood but frequently forgotten principles of science.

For the first objection above we shall apply our first forgotten principle: *A theory is abstract by intention; it is deliberately "impractical."* That aspect of science that is often considered its major shortcoming is actually its distinct advantage. It is its abstract, "impractical" nature which makes possible a level of functioning far above the popular quiz-program concept of knowledge, an encyclopedic mastery of details. It is the abstract, conceptual classification of minutia that enables us to contain a volume of knowledge in a brief insight. A theory can be general only to the extent that it is abstract. Individual facts and relational laws are contained in, and may be deduced from the more general concepts. A superphysicist could infer immediately most of physical knowledge from $e=mc^2$. But since we lesser mortals must be content to discover these relationships in a piecemeal manner, why bother with the general formulations?

With generality we gain in two ways. First, some new and as yet unobserved knowledge becomes predictable: The existence and position of the planet Neptune became known before it was actually observed. The second advantage of general

conceptions is that functional knowledge in one situation may be applied to other situations. When Newton unified physics and astronomy one could study planetary motion intensively in a laboratory or, using mathematics, on a sheet of paper.

In other words, the scientist strives for the same goals that are sought by a classroom teacher: transfer of training, or the use of old knowledge for new problems. As with classroom learning, transferable knowledge must transcend isolated events. The question asked by an experimenter is not whether children learn their ABC's in the same way that eye-blinks are conditioned. The differences between these systems of responses are obvious. The theorist is seeking an abstract scheme which relates to both verbal learning and eye-blink conditioning. If such can be found, or rather invented, then what is learned through an intensive study of eye-blinks becomes transferable to more complex behavior. And if the system selected should be applicable to animal behavior also, the results of animal studies become transferable to humans.

Whether insights from experimental observations can be useful in complex behavior is determined by a process called validation. Hypotheses are derived from, say, rat theory and tested against actual occurrences in humans.[7] Our critics too often do not understand what is involved. They point out, for example, that one cannot expect to change a melancholy disposition by conditioning a smile on the face of the subject. The *S–R* bond is, of course, an abstraction, a conceptual unit, not a working hypothesis. When one expert's ideas are applied by another expert's rules it is hardly surprising if the results are absurd.

There is a second important aspect of validation. As all learners discover, some knowledge breaks down because of inadequacies in the generalization or concept. Thus a child rejects his first impression of a flat world in favor of a round one when subsequent experiences prove inconsistent with the earlier belief; and some day he may speak of an oblate spheroid. In like manner a theory must be rejected or altered as new data fail to correspond. Few believe that there can ever be a complete theory, but expect continued revisions. How, then, can one accept scientific guidance in such chaos? How can a teacher profit from a study of the learning process if the theories in her textbook are dated by the time the book leaves the press? One would suppose that, when physics shifted from Newton to Einstein, apples stopped falling in absolute space and hopped onto a four-dimensional space-time bandwagon. As a matter of fact we can still describe falling apples as validly, and more conveniently with Newton's laws than with Einstein's. The current tendency to look down our noses at any physical theory preceding Maxwell and Einstein is absurd. Newtonian principles were adequate to see physics through 200 years of progress, and their applications are as valid today as they were then.

Freud's demons are being superseded by behavioral-learning mechanisms, but ego strength, for example, is still a useful concept, grounded as it was in clinical experience. If a concept is constructed around empirical observations, it can become only dated, not obsolete. The advantages of newer formulations

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[7]For a review of several studies in which animal theory was tested with children see Sears, P. S., "Developmental Psychology," in P. R. Farnsworth and Q. McNemar, eds., *Annual Review of Psychology*, 1958, 9, pp. 119–156.

are usually that they have greater scope and involve more discriminating application.

Perhaps an example will clarify this last statement. One can grant that Freud actually found a sex drive permeating behavior in many of his subjects *without* concluding, as did Freud, that sex is the basic motivational urge. We know from both animal and human studies that the presence of a strong unreduced drive will add to the effective strength of any other drive which is functioning at the same time. Furthermore this first drive will carry with it some of its own meanings. Hence, sexual frustration would intensify other behavioral patterns as well as add a sexual connotation in some instances.

Intentional limitations of an experiment. Thorndike preceded the statements of his laws of learning with the phrase, "other things being equal." The restrictions imposed by these words disturb many applied psychologists because they know that other things are usually not equal. Hence, learning theory is artificial.

Our second forgotten principle of science must be invoked: *A scientific law states a functional relationship, but in the mathematical, not practical sense of functional.* The scientist states precisely what, and preferably how much to expect if certain conditions obtain. If a law is to serve its scientific purpose it must be unequivocally defined in observational procedures. The restriction is intended. A physicist using Thorndike's language would say, "Other things being equal, the volume of a gas is directly proportional to its temperature," and, "Other things being equal, the volume of a gas is inversely proportional to its pressure." But are the separate laws useful only when the third factor is at standard conditions? The complete equation, of course, expresses volume as a joint function of temperature and pressure.

The purpose of "pure" experiments is to examine a relational law under the only conditions in which it can be studied precisely: experimental control. Only after many experiments defining numerous laws and their interactions can the engineer tackle confidently the complex problems in the uncontrolled world outside the laboratory. The grounds upon which the human engineer so frequently attacks laboratory psychology are no more valid than they would be for a mechanical engineer if he should attack laboratory physics.

Need for control. Is the no-man's land outside the laboratory really uncontrolled? It is as the engineer finds it. Control can be introduced, however, through identification and measurement of pertinent variables, which introduces our third forgotten principle: *A scientific law can predict to the extent or degree that control can be obtained in a situation.*

Every psychologist has experienced the frustration induced by the simple question, "How can I stop my child from sucking his thumb?" We are accused, often gleefully, of hedging when we attempt an answer. Perhaps we could reduce our frustration by sharing it with colleagues in other fields. I might ask a physicist how I can hit a wastebasket with a rejected page of my creative efforts? If I should wish really to needle him, I could point out that I have hit it upon previous occasions, throwing with the same arm and at the same receptacle; why not every time? If the physicist, like the psychologist, were unsure of his position in the pecking order of sciences, he might appear to hedge too.

Such questions are unanswerable because pertinent factors are not identified, not because scientific laws are inadequate. If the physicist could determine the several forces operating he could state exactly where the crumpled paper would land. The engineer, the teacher, the counselor, the clinician, must evaluate various forces if he is to use psychological theory effectively. His concern is with the kinds of data he can observe and which also function within a suitable theoretical framework. If he should be blinded by a belief in data *per se*, if he thinks there can be only one valid theory that describes how things really are, his task must appear hopeless. Since data may be chosen according to purpose and function, however, the engineer is free to select a theoretical structure which utilizes the kinds of data he can observe.

A GLANCE AT BEHAVIOR THEORY

The chaos in behavior theory which existed in the 1930's has almost disappeared. In fact psychologists are hard put to find a fundamental issue to be cantankerous about. Tolman has decided that everybody is right.[8] Spence has embraced a two-factor theory of learning which supposedly resolves the contiguity-reinforcement conflict.[9] The principal remaining disagreement concerns the level of reduction necessary for effective theory building. Obviously we cannot go on reducing concepts forever. There must be primitive terms whose only meanings are determined by pointing at occurrences. But where shall we stop?

Broadly speaking there are two answers: the perceptions of the subject, and the perceptions of an observer. The former is characteristic of perceptual psychology, the latter of behavioristic or *S–R* psychology. The former typically explains learning as perception, the latter perception as learning. Although both perception and learning were discrete areas of psychology originally, each now professes to be a more or less complete accounting of behavior. As a way of illustrating some of the points in the preceding discussion, let us examine some concepts included in these two orientations.

Is perception a given? The *Gestalt* concept of nativism in perception, which appears to have been lifted from Kant's *a priori* knowledge, stressed that perception is a given, a datum *per se*, and hence not reducible. Insight, the key conceptual unit for explaining complex behavior, emerged, if not as nativistic knowledge, at least as a historical knowledge. True, experiences were necessary for the formation of insights, but the insights themselves were sudden, immediate perceptions, neither reducible nor continuous in their development.

Objections to nativism in psychology must be largely historical, because nativism as a substitute for learning is rapidly disappearing. Insight has died hard, however, and we are still suffering from the hangover. The belief that insights are immediately transferable to new situations defined away the most pressing problems that a teacher faces. One must only understand, and behavior naturally follows. Much of our educational thinking seems to assume that, for example, if a student "understands" why salt water freezes at a lower temperature

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[8]Tolman, E. C., "*There is More Than One Kind of Learning.*" Psychological Review, 1949, 56, pp. 144–155.

[9]Spence, K. W., *Behavior Theory and Conditioning*, (New Haven, Conn.: Yale University Press, 1956).

than fresh water, or why salt is sprinkled on the ice in a do-it-yourself icecream freezer, he will also know why solder melts at a lower temperature than lead, one of it constituent metals. It should be obvious to any teacher that a person may understand a principle without incorporating it into his behavior, or without knowing all of its applications. Of course *Gestalt* psychology did not go this far, but such has been an unfortunate interpretation in practice.

Current perceptual psychology in education[10] not only ignores learning theory as such, but frequently condemns it. I have been accused of being a totalitarian because of my *S–R* disposition, while perceptual psychology was defended as being democratic. Apparently, behavior is to be explained by the simple statement that a subject responds to a situation "as he sees it." Such an explanation supports the belief that, if we sufficiently "free" an individual, his natural (and desirable) behavior will emerge spontaneously from within him. The danger lies in the lack of recognition that what is within a person more often than not depends upon what has been put into him.

Knowing that a child learns in a threat-free atmosphere is all right as far as it goes, but more could and should be said about the acquisition of behavior. There has been a tendency to assume the higher thought processes; there is the feeling that if threat is removed an individual will just naturally adjust, that if a child is placed in a threat-free atmosphere with an accepting person, he will just naturally behave himself, at least after a while. There is a similar attitude underlying much of our theory of group processes. The objection is not to the over-all validity of these positions, but to the lack of formulation of what happens, which should include the factors that determine behavior. The "uh-huh" of the nondirective psychologist has been shown to be directive,[11] grounded as it is in one of the most powerful rewards available, social approval. Acceptance itself is a reward and as such will determine behavior. It generally works because most subjects have a suitable background of social values to build upon. In other words, behavior follows a pattern which *could* be described by a reinforcement concept. For this reason the teacher should recognize the need for understanding the determinants in the learning process instead of blithely assuming that her worries are over when the pupils have been freed. If the perceptionists will but recognize this point, they can immediately know more about the effects of acceptance by studying the literature on motivation and reinforcement.

When perception was considered a native phenomenon one had no choice but to accept it as a fundamental datum. The question, "Why does he see it as he does?" had no answer separate from the innate structure of the organism. Many perceptual psychologists today have rejected nativism, but the mystical "as he sees it" stands between them and an unambiguous reduction of perceptual meaning to experience. What is this middle ground? What is the meaning of perception as a primitive term? Is it still a given, and if so, how does one observe it? If perception is not something springing forth spontaneously from within the subject, then we are committed as scientists to give it a precise formulation, to nail it down to observables. Whether behavior is completely determined by the

[10]The following criticisms do not necessarily apply to perceptual theory in all areas of psychology. In fact, partial solutions to some of the problems raised in this section are already available in experimental literature.

[11]Lawrence, D. H., "Learning," in P. R. Farnsworth and Q. McNemar, eds., *op. cit.*, pp. 157–88.

pattern of forces existing at a given time requires no experimental proof. The "life space" and "psychological field" are logically entailed by our choice of the contiguity principle. But again, the question is how can one observe the psychological field or reduce it to observables?

Asking the question does not imply that perceptionists are on the run. There is a need, however, for greater precision in relating the concept of perception to data if it is to be useful to the engineer. A teacher can be nothing more than a random force in a child's experience unless she can comprehend the child. In short, the perceptions of the subject must be reducible to the perceptions of the observer. Whether a suitable reduction scheme can be obtained has been the object of much useless debate, useless because it is not a logical question but an empirical one. Bearing in mind some of the foregoing points, we must recognize that to say that human behavior is not reducible is to say that man can never be ingenious enough to invent a suitable conceptual framework. Such an assertion must arise from an assumption that science discovers laws of things and studies how things really are.

Purposivism in behavior, long the favorite battleground for perceptual psychologists, is not longer a bugaboo. Treating perception as a given ignored the historical development of purpose, which is a useful avenue to understanding and directing its growth. The applied psychologist too often concentrated only on understanding the needs of his subject; it is just as important that he understand how needs develop and how he can help the subject develop further needs (social, intellectual, *etc.*) which will enhance his over-all adjustment. The learning theorist has busied himself constructing such a reduction scheme. Some of the fundamental conceptual tools were developed in the thirties: Guthrie's stimulus concept of motivation; Hull's anticipatory response; the concept of cue-producing responses. Compare the statements that a subject responds to a situation "as he sees it," and that his responses follow a specifiable reinforcement pattern, with meaning deriving in a specifiable manner from past experience, and with a definite role and function assigned the higher thought processes. Both "explain" behavior, but only the latter is readily reducible to data language and precise prediction. Furthermore the former is not subject to empirical verification.

The S-*end of* S–R. There are a number of trouble spots yet to be removed in modern learning theory. One such difficulty is the nature of the stimulus, and many of us are not sure which way we are going. If stimulus is taken to mean an outside event, *e.g.*, a light source, then an internal "conditioner" must replace the *S* in *S–R*. It is hardly conceivable that a response can be connected to a light source. Rather, one conceives of a bond between the response and an internal event arising from external stimulation. So far, it makes no difference which we call stimulus since both the external and internal events need to be represented.

The difficulty arises when one tries to equate internally aroused behavior (innate and learned drives) with what may be called externally aroused behavior. If a distinction is to be made between these sources, then a further separation of internal drives and drive stimuli is indicated, paralleling the external-stimulus, internal-conditioner dichotomy. If we are seeking a simple scheme, why not choose a concept that covers all these factors? The battle seems to be going in

this direction. Dollard and Miller have shown that certain behavior is more comprehensible, and more easily described, if drive and stimulus are equated.[12] Of course, Guthrie has said so all along, and Hull's dropping of the distinction between drive and drive stimulus in his most recent work indicates that he agrees.[13] Such a position transforms stimulus into a general drive concept, and has the advantage of incorporating a great variety of behavior instigators in a single abstraction.

How can these internal events be observed? A thorough analysis of stimulus is beyond the scope of this paper; however, the discussion of drives appearing below illustrates the general procedure.

THE PRACTITIONER'S ROLE

How does one go about applying theory? A partial answer to this question is indicated when the nature of scientific definitions is understood. In previous sections we saw that theory may be considered an invented abstraction which, to the extent it is complete, specifies inter-relations of simple conceptual units. To apply theory it is necessary to isolate variables in the field of application which correspond to the conceptual units and which preserve the theoretical inter-relations (isomorphism). "2+2=4," for example, is a theoretical relation, necessary by virtue of the logical foundations of arithmetic. It is a valid law in application only if two couples grouped together and re-enumerated are four. There are numerous instances in the natural sciences, especially chemistry, where this relation does not hold, and violations are rampant in educational and psychological measurements.

For this reason useful scientific definitions typically state the conditions which must be fulfilled before a phenomenon may be considered an instance of a certain term. These defining criteria are usually some of the more fundamental inter-relations of the theory. Let us now consider an example of applied psychological (mostly rat) theory and the significance of the nature of scientific definitions will become clear. Just as force in physics is defined by acceleration of a mass, drives in psychology are defined in terms of their effects: If behavior associated with the cessation of a condition is learned, that condition is a drive; learning will be an increasing function of drive up to a point, beyond which learning becomes a decreasing function of drive; the point of maximum facilitation occurs at a lower drive level for complex than for simple learning; any learning under high drive will resist extinction (forgetting) longer, will have greater spontaneous recovery, and will generalize to more different situations; *etc.* Fear in animals and humans has been shown to meet these conditions which were established mostly with hunger drives in animals.[14] This is not to say that fear in humans is the same as hunger in rats; but if we can succeed in observing (operationally defining) fear in humans in a way that satisfies the criteria of hunger drives in rats in these respects, then all we know about such characteristics of hunger drives become applicable to fear in humans.[15]

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[12]Dollard, J., and N. E. Miller, *Personality and Psychotherapy*, (New York: McGraw-Hill Book Company, Inc., 1950), p. 30.

[13]Hilgard, E. R., *Theories of Learning*, (New York: Appleton-Century-Crofts, Inc., 1956), p. 129.

[14]*cf.* Dollard, J., and N. E. Miller, *op. cit.*, pp. 63–74.

[15]Strictly speaking, this statement is necessarily true only to the extent defining criteria constitute a formal axiom system.

Intensive work is now being done relating the clinical concept of anxiety to drive.[16] When accomplished, the numerous personality theories derived from theories of anxiety can utilize hundreds of hypotheses from experimental psychology. If the reader will substitute "anxiety" for "drive" in the examples of defining criteria given above, he will see the implications of this strategy. The problem of how to "challenge" a student without "threatening" him becomes a matter of degree of motivation. (*cf.* above, "learning will be an increasing function of drive up to a point, beyond which learning becomes a decreasing function of drive.") One can escape from the rather peculiar position that learning is derived only from feelings of adequacy, and that feelings of inadequacy interfere with learning. Feelings of adequacy—inadequacy are matters of degree, a motivational continuum derived from drive. Most intellectual learning assumes some feeling of inadequacy; only when the conditions go beyond the point of maximum facilitation does interference occur. By jumping to a higher level of abstraction, *i.e.*, drive, a clearer, more precise formulation is possible. We shall return to this point.

In summary, if the applied psychologist is to fulfill his role in scientific psychology, he must (1) understand behavior theory (2) understand what is involved in applying any scientific theory, and (3) seek ways of translating conceptual units and theoretical laws into variables and relations observable in professional practice.

There is a fourth responsibility which is as important as these three, though dependent upon them: The applied psychologist should also be a creative scientist. If the theoretical hypotheses fail to hold up in practice, or if a suitable translation cannot be obtained, he is best prepared to suggest revisions in the theory. The applied psychologist need not assume a subservient role. Fortunately many of them have not. Depth psychology, the motivational approach to behavior, began with a practitioner. Applied psychologists have a store of knowledge, intuition, "clinical insights," which are begging for more precise formulations.

Psychologists have used various dodges to avoid being pinned down on an idea. Clinical insight was long a puerile retreat for the clinician. It was never criticized for being what it is, however, only for the failure to formulate it, to try to understand the bases for the intuitions. Before we can communicate our knowledge to others, before we can even understand it ourselves, we must formulate it. Simply asserting that it is beyond formulation is an admission of ignorance.

A companion assertion is the one that anything rigorous is narrow. A refutation of such statements was made earlier, but one other point should be emphasized. Many rigorous formulations are narrow. The fault lies not with rigor, however, but with the level of abstraction employed. One can use the word "table" in the ordinary manner to denote a certain class of objects. But if chairs should be included also, part of the precision would be lost since the original term must now include objects with a greater variety of characteristics. Such would be similar to a child's calling all non-human mammals "doggie." The original precision of "table" and "chair" can be retained, and generality nevertheless

[16] *cf.* Jensen, A. R., "*Personality*," in P. R. Farnsworth and Q. McNemar, eds., *op. cit.*, pp. 295–322.

established by using the term "furniture" for the more general class. "Furniture" can then be defined as rigorously as "table" and "chair" are as separate classes. The difference between "furniture" and "table" when the latter was overgeneralized is that furniture is seen to contain two well defined sub-classes, and its defining criteria would be different. In this connection the reader might ponder the criticism of the ambiguous "as he sees it" explanation of behavior given earlier.

In other words, for a statement to be both rigorous and general it must be abstract. The failure to recognize this point has resulted in confusion and ambiguity in educational psychology, as well as misapplication of theory (*e.g.* teaching by *S–R* principles.)

Much that passes today as educational psychology falls pitifully short in the aspects of scientific psychology discussed in this paper. I believe the basic difficulty is a lack of appropriate training. For years clinical psychology eschewed experimental psychology, but today a new breed, or rather hybrid has emerged, the experimental clinician. Furthermore, there are numerous instances of prominent learning theorists and clinical psychologists doing series of studies together. Unfortunately educational psychology has been more successful in breaking with scientific psychology. We talk science in education, but indications of an understanding of science are not common. We actually protect our students from scientific training. Psychology is to education what physiology is to medicine, but if the average doctor of medicine knew no more about physiology than the average doctor of education knows about psychology, grandma's herbs would still be in vogue. To those who reply that scientific psychology cannot offer education anything, I say only that they find out for themselves.

EDUCATION AND THE NEW SCIENCE

(*Continued from page 106*)

limited extent, in the physics of great distances and velocities. How they are created or why they are created has not been demonstrated by the philosophically minded physicists. But that they are necessary to the process of inquiry most modern physicists seem to be in agreement.

What the modern physicist has brought to light has been mainly negative prescriptions rather than positive knowledge which can be applied to a unification of knowledge. For them there will always be conflicts in knowledge. Their hope rests in defining means to locate and identify these conflicts so that acceptable choices can be made by individuals and groups of individuals.

THE IMPLICATIONS OF THE PERMISSIVENESS DOCTRINE IN AMERICAN EDUCATION

BY FRED N. KERLINGER

THE DOCTRINE OF PERMISSIVENESS IN EDUCATION AND ITS RELATION TO DEMOCRATIC IDEOLOGY HAVE BEEN TORMENTING PROBLEMS TO AMERICAN EDUCATORS. Most thinkers apparently agree on a rather large measure of permissiveness in the education of children. The idea seems basically to be that children, if they are to mature into democratic individuals and citizens, must not be too restricted in the pursuit of their own interests and needs, since such restrictiveness will somehow have the unfortunate consequence of producing undemocratic citizens. If children are not "permitted" a good deal of freedom—more specifically, decision choice—then they will not mature into autonomous, cooperative, and generally democratic individuals. In short, without permisiveness we run the danger of creating authoritarian individuals and an authoritarian society. Certainly, the argument goes, we now have a generally authoritarian school system which is systematically warping millions of children into undesirable types of human beings, human beings who lack autonomy, maturity, and true democratic potentiality.[1]

That there is much truth in the above argument few educators would deny. The underlying undemocratic and even authoritarian quality of many, perhaps most, American schools and classrooms seems evident, if we are to believe responsible critics.[2] Yet it also seems that a good deal of the older restrictiveness and authoritarianism have been mitigated; improvement, while slow, has occurred.[3] The strong reaction against the older restrictiveness in education which started in the early part of the century has had its effect. Old-line authoritarian educational thinking and methods are becoming more and more disapproved as the contemporary permissive influence makes itself felt. The superintendent, principal, or teacher who wants to play the boss role must now do it in a more covert and subtle fashion.

The purpose of this paper is to speculate on the possibility of a new authoritarianism springing from a relatively *extreme* and basic emphasis on permissiveness. In a previous paper in which the modern origins of permissiveness in American education were traced, it was claimed that the doctrine of permissiveness in education had its origins in the thinking of Freud and Dewey and that the strong

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[1]For an excellent discussion of some of these points, see Ross Stagner, *Psychology of Personality*, 2nd Ed., (New York: McGraw-Hill, 1948), Ch. XX.

[2]Arthur B. Moehlman, School Administration, (Boston: Houghton Mifflin, 1940); Howard K. Beale, *Are American Teachers Free?* (New York: Charles Scribner's Sons, 1936). Many other references could be cited.

[3]Careful *scientific* studies of authoritarianism in education are scarce, almost non-existent. This is probably a function of the difficulty of measuring such a complex phenomenon as authoritarianism plus a general touchiness of school people on the subject.

impact of these two great thinkers had laid the foundations for modern ideas and practices of permissiveness in education.[4] It was also suggested that a new authoritarianism might be arising, a phenomenon expressed by two concepts which are becoming influential symbols in American education: permissiveness and group dynamics. It was further suggested that possibly there were manipulatory and authoritarian implications of the doctrines many educators are espousing. Finally, the paper hinted at a covert anti-intellectualism springing from permissivist and group dynamics doctrines. The present essay will be limited to an analysis of the implications of the permissiveness doctrine. Group dynamics doctrine was partially explored in a previous paper.[5] Similarly, the anti-intellectual implications of the permissiveness doctrine will not be directly discussed. It must wait for future treatment.

The argument that follows is based on five main points: (1) that the doctrine of permissiveness is more of a reaction against older restrictive and undemocratic educational ideas than it is a *movement for* democratic ideas; (2) that the espousal and implementation of relatively extreme permissive ideas imply and lead to manipulation of the pupil by the teacher and of the teacher by the pupil; (3) that while extreme permissive practices are claimed to be democratic they may be in effect autocratic; (4) that when permissive ideas dominate a teacher, when they form the mainspring of her educational being, they lead to a basic violation of the integrity of the individual; and (5) that when permissiveness is a fundamental and overriding concern of the teacher it leads to a pervasive conformity of the individual to the will of the teacher and/or the class group.

Before beginning the main discussion, an important point should be clarified. This paper is not meant to be a critique of permissiveness in general. It is assumed that a moderate amount of permissiveness is good and that the older educational restrictiveness is bad. The permissiveness to be discussed is the relatively extreme and unilateral doctrine espoused by a number of educational writers, some of whom will be cited. This unilateral doctrine seems to imply a wholesale sort of permissiveness running from the kindergarten through the graduate school, a permissiveness which labels almost any sort of educational direction from a teacher as a sign of autocracy, which says that to lecture is to impose one's will on students and is therefore bad, authoritarian, and to be eschewed by the democratic educator, which says, furthermore, that group processes in the classroom are in and of themselves good, democratic, to be encouraged since they presumably permit the greatest amount of individual expression through democratic interaction with others. In short, it is the unilateral and extreme doctrine of permissiveness which permits nothing but permissiveness and which threatens to become dogma and religion that is the object of scrutiny.

The first point, that a great deal of permissivist doctrine is a reaction *against* the older authoritarianism and restrictiveness in education rather than a movement *for* permissiveness and democratic ideas is apparent from a study of much education literature. One gets the impression from reading permissivist works that nothing in the older education was much good—except the pupils. This reactivity against traditional education accounts for much of the literature's extreme and

[4]Fred N. Kerlinger, "The Origin of the Doctrine of Permissiveness in American Education," *Progressive Education*, XXXIII (1956), 161–165.

[5]Fred N. Kerlinger, "The Authoritarianism of Group Dynamics," *Progressive Education*, XXXI (1954), 169–173.

rather naive quality, and it leads permissivist authors to be somewhat condescending and patronizing when talking about the older education and about practices with which they disagree.[6] Permissivist literature has mainly negative criticism of traditional education as its ideological foundation. When it comes to the task of constructing a positive philosophy permissivists find themselves in a difficult position since they must "permit" anything but restrictiveness. What permissivists have done, therefore, is to attempt to solve the problem by borrowing quite selectively from Dewey and Freud, mainly, and by manufacturing a new metaphysics on the basis of these borrowings. The character of the movement is heavily moral and, as already indicated, seems to derive most of its force from derogation—derogation of the older education, of subject matter, of teachers. The derogation is often concealed by words and rather vague, even mystical, writing, For example, Rasey says, "And we teachers. We teach nothing. We can no more teach than we can learn a child. We are onlookers while life teaches."[7] As with many such statements there is a kernel of truth here. But there is also obfuscation of the teaching-learning problem. A number of examples of derogation can also be found in Cantor's work. One of the best of these is his castigation of instruction which begins with definitions.[8] He implies that any instructor who uses definitions in approaching a subject is, *ipso facto*, a bad teacher. In another place, Cantor, like many other educators, derogates those who lecture. He says, "The instructor who lectures deprives the students of their right actively to participate in their class."[9] He then says, very significantly, "The instructor who is aware of his function refrains from using students for displaying his knowledge. He permits himself to be used, in a professional way, by them."[10]

The argument being advanced is that, if permissivism is basically a reactive doctrine it must also necessarily be essentially negative in tone and practice. The teacher must *not* do anything restrictive; she must *not* do anything—or think anything—traditional. To be deeply concerned with subject matter, for example, is questionable since it leads to "coercion" of pupils.[11] It seems evident that permissivist educators served a very useful purpose during the early days of reaction against the authoritarian practices of the past. (The battle is of course by no means yet won.) To continue to espouse a basically negative and reactive ideology, however, can be a defeat of the hard-won victories of a splendid educational movement.

Perhaps the most serious implication and end-result of extreme permissiveness is that it leads to manipulation of pupils. The very permissive teacher sets up

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[6]See, especially, Earl C. Kelley, *Education For What Is Real*, (New York: Harper, 1947), Chapter V *et passim*, and all of Nathaniel Cantor, *Dynamics of Learning*, (Buffalo: Foster & Stewart, 1946).

[7]Marie I. Rasey, *Toward Maturity* (New York: Barnes & Noble, 1947), p. 231. See, also, the same author's *This Is Teaching* (New York: Harper, 1950).

[8]Cantor, *op. cit.*, pp. 145 and 153.

[9]*Ibid.*, p. 174. See also, Earl C. Kelley and Marie I. Rasey, *Education and the Nature of Man* (New York: Harper, 1952), p. 86. This latter work is especially interesting because it is supposed to give the scientific foundations for the authors' educational beliefs. Of the entire list of 131 entries (footnotes), however, only four are reports of actual scientific research, and of these four perhaps one is a significant study.

[10]Cantor, *op. cit.*, p. 174. Space limitations forbid citing other examples of derogation. In fact, the references for the points made have been kept to a few particularly clear cases. But many others could be cited.

[11]Kelley, *op. cit.*, pp. 98–99.

few or no limits for her pupils. Few norms of behavior and learning are supposed to be teacher-determined. But a normless social situation is of course impossible; some norms or rules must always govern behavior. If the teacher does not supply the rules or norms, the pupils will. Fine! says the permissivist, and it is fine—to a certain extent. But the teacher is a basic authority ingredient of any learning situation. Many educators may dispute this and say that the learner, or rather, the learner group should be the basic ingredient. But the teacher is a guide to learning; she is the experienced group member who must take a leading role in directing group activities toward educational goals set at least partly by society. She is society's surrogate who must ensure, by norm and rule-setting, that the societal educational goals are reached. Now when she does not take this function, she puts herself into the unfortunate situation of being forced, consciously or unconsciously, to manipulate her charges. She *must* discharge the societal function; there is, by definition, no alternative. Pupils may take the responsibility adequately; they may decide to teach the societal goals. Then, again, they may not. And this cannot be left to chance, and any teacher knows it. Pupils, even by the age of six, are dimly aware of it, as Piaget's work would seem to indicate. The problem boils down not to whether or not there are norms—there are always norms—but to who sets the norms. Ideally both pupils and teacher should set them. Yet the teacher's role in norm-setting, again by societal definition, must always be dominant. Any other situation is sociologically and psychologically anomalous. To say that this is a violation of democratic freedom is semantic nonsense. Freedom is always relative; it is always bounded by norms and rules for behavior. As Dewey well said, ". . . guidance given by the teacher to the exercise of the pupil's intelligence is an aid to freedom, not a restriction upon it."[12] The argument can be rounded out with another Dewey excerpt.

> Sometimes teachers seem to be afraid even to make suggestions to the members of a group as to what they should do. . . . But what is more important is that the suggestion upon which pupils act must in any case come from somewhere. It is impossible to understand why a suggestion from one who has a larger experience and a wider horizon should not be at least as valid as a suggestion arising from some more or less accidental source.[13]

The above argument leads to the third point: that extreme permisivism leads to autocratic rather than, as supposed, to democratic thinking and practice. If the permissive teacher acts upon the precepts of a Kelley or a Cantor, she will find herself in a peculiar predicament. If the group will does not point in the socially desirable direction—and, again, any teacher will know this by the very nature of social norms which depend for their efficacy on being interiorized by all or most members of a society—she will be in the uneviable position of manipulating the group so that it will more or less fall into line. The famous expression, "Do we have to do what we want to do today?" while a humorous exaggeration, contains the kernel of this problem. Basically, and somewhat cynically, the teacher who is committed unilaterally to permissiveness must so manipulate the situation, herself, and the pupils that the goals of society which are her goals by definition since she is, at least in good part, a surrogate of society, are achieved. The manipulation comes in when the direction of educational activity strays too far from the

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[12]John Dewey, *Experience and Education* (New York: Macmillan, 1938), p. 84.
[13]*Ibid.*, pp. 84–85.

societal goals. It should not be thought that this is a defense of education as a preserver of the status quo. No matter what position is taken on education's function, it still remains a fact, by the definition of education as a cultural phenomenon, that schools must teach at least a basic core of values, attitudes, skill, and facts. Variability will be very great in a democracy, naturally, but the common norm must be there.

In other words, the lines must be drawn somewhere, and it is the teacher acting for and as society who draws the lines. And the lines must be clear and unambiguous. To think or act otherwise is to lay the foundation for social and personal chaos. One good definition of a teacher is that he is a person working to put himself out of a job. This means, of course, that a teacher always should try to have his students develop as rapidly as possible into mature people who have learned what he knows, who have his understandings and more. To give a child too much freedom too soon, to force children to make choices they are really incapable of making, is to defeat this definition because, as Fromm has pointed out, we have to grow to independence through dependence, through self-love to love of others. Learning from teachers always has this symbiotic character. It is not undemocratic; it is natural and inevitable.

That an espousal of relatively extreme permissivism can lead to violation of the integrity of the individual follows from the argument on manipulation. Manipulation of pupils, if practiced systematically, is a violation of the integrity of both pupil and teacher for quite obvious reasons. The integrity, the wholeness, of any individual depends upon acting fairly consistently in accordance with both approved social norms and one's approved self-image. The manipulation is of course usually not perceived as manipulation. The teacher has herself been taught that the ideas she is trying to implement are good—and they are good. Democratic cooperation, participation in the learning process, and the like are good values. But the difficulty is how to achieve them. The group way, she has been taught, is the right way. She is also taught not to impose her will on children but to discover their needs and interests and to use these to achieve the learning objectives. All this, too, is good. But somewhere, some time, she must draw lines beyond which children cannot be permitted to go. To do this she sometimes must use methods which, in a permissivist framework, are not good, she believes. Thus there is a conflict. And the conflict between being democratic and autocratic cannot be resolved, for her at least, by a clearcut choice. She has no choice: she must be democratic. Yet to be democratic, she has learned, is to be permissive. Her only recourse is to use the permissive methods and still achieve societal objectives. And this often means doing things which are "coercive." She often ends up using "nice coercion." Children soon learn the rules of the game, and, as Riesman points out, they become skilled at conforming to these "nice" demands. They also become skilled at manipulating the teacher. But in the process both teacher and pupil lose some of their integrity since life and the classroom are not always so nice, so cooperative, so democratic, and in order to maintain the "nice" fiction, it is often necessary to practice mild but insidious deceptions on others and on oneself.

To complete the argument, we need to examine the relationship between permissiveness and conformity. When permissiveness is the *fundamental* guide of a teacher's thinking and behavior, pupils must pay the price of conformity.

This is perhaps best understood by going through the back door. It can be agreed that in an autocratic setup the social situation is clear to all parties concerned—role relationships are clearly understood as are group norms. The pupils, for example, at least have something concrete to rebel against and, if necessary, to fight. But with the highly permissive teacher, whether manipulatory and autocratic or not, there is nothing to rebel against or to fight. A pupil may have a vague feeling of being used, and he may want to do something about it. But what can he do? Even the other pupils will disapprove of him if he goes against the "nice one." The pressures toward conformity are very strong in such situations. And the conformity goes beyond what was demanded under the outright and open autocratic setup: it is personal and moral as well as behavioral. The pupils should even think like the teacher, or rather, the teacher-pupil group.

Study of a number of contemporary educational writings shows learnings which clearly imply conformity to the group. In fact, permissiveness and group cooperation, as doctrines, usually go hand in hand in much of the writing. They seem to be basic tenets of a new orthodoxy. For example, Kilpatrick, in talking about the effectiveness of group education, says:

> How then is good character best built. . . . In the multitudinous social contacts there will inevitably arise situations of social stress. Under wise guidance the group should be led to see the issues involved and conclude as to just disposition of the dispute. Such a group conclusion no individual will permanently dispute. To defy his group seldom satisfies. *In the end he will accept . . .*[14] (Italics mine.)

Comment here is hardly necessary.

Along with these emphases goes a concomitant rather strong emphasis on emotional learnings. One gathers that the basic function of education is to foster proper emotional attitudes and the ability to get along with people.[15] It is here contended that this "sociometric" approach to education, as Riesman has aptly named it, is actually detrimental to democratic education, that it leads in effect, to autocratic practices. When the emphasis in a class is emotional, it is difficult for children to learn objective modes of thinking. They learn to focus on the rather slippery ground of affect and only secondarily learn to handle facts and things. It is not contended here that emotional learning is wrong. But it *is* contended that a *basic* emphasis on emotional learning is wrong. The emphasis in a classroom should be on work, on things, *and* on attitudes, but work should be central. Only thus is the child free to develop as a democratic human being. When the central emphasis is on feelings, especially feelings toward other persons, objectivity, independence, and autonomy become difficult or even impossible to learn and to achieve. This is because constant preoccupation with one's own and other people's feelings is an unstable and insecure ground on which to build a basis for learning to make objective and critical judgments of problems and issues since all of one's thinking becomes colored and perhaps distorted by interpersonal affect. This is a major defect of much of the practical application of group dynamics as well as of the classroom dominated by feelings. When one learns

[14]William H. Kilpatrick, *Group Education for a Democracy* (New York: Association Press, 1940), p. 130.

[15]See *ibid.*, pp. 103–104, and Marie I. Rasey, *This is Teaching, passim*, as examples.

always to be concerned with the feelings of others and of oneself *as primary* in any situation, then one also learns to be careful and circumspect, to be always concerned with not promoting bad feelings. Such affect preoccupation effectively cripples any budding learning of how to approach problems objectively since one's approach to problems becomes strongly conditioned by irrelevant concerns such as what other people may think of your proposed solution of the problem. Questionable hypotheses, hypotheses that might jar the group and other people's feelings, are entertained timidly if they are entertained at all. Gradually one learns to be sufficiently sensitive to what will or will not disturb other people's feelings. There are always situations, in any problem solution and in any complex learning, in which it may be necessary for someone to say, "You're wrong; this is the right solution." But this is forbidden in the permissive, group-oriented classroom, strange as it may seem. The word "permissive" comes to mean to permit anything but that which will hurt feelings, which will disturb the nice cooperative atmosphere of the class group.

It can readily be seen that permissiveness in education is anything but permissive. Norms, rules of behavior, are set up in any situation. In the traditional classroom they are set up almost entirely by the teacher. In the permissive classroom, they are set up by the group which includes—or may not include—the teacher. In the former situation the norms are usually clearcut and well understood. They may not be liked but they are clear and unambiguous. And traditional classrooms are usually object or subject or problem-oriented. In the latter situation the norms usually lack clarity and definiteness; they are the rather amorphous product of an amorphous social situation where, theoretically, much is permitted but where, in reality, a great deal is restricted. Norms that are amorphous and ambiguous, however, are still rules of behavior, expectations about the right and wrong things to do. The trouble is that no one is clear as to just what is right, only what is wrong. It is wrong to be uncooperative, not a good group member, not nice. Anything else is right, provided it meets the needs and purposes of the group members. Such an inverted value scale is characteristic of extreme permissive groups, and it is no wonder that manipulation also becomes a characteristic. Manipulation is almost demanded by such a topsy-turvy social situation for, as indicated earlier, the group leader is responsible for achieving the external group goals. But she cannot impose her will; this would not be democratic. Thus she must manipulate the group except in the fortunate case when the group's wishes perhaps fortuitously coincide with the external group goals, i.e., with the goals of society.

The individual psychological consequences of permissiveness have been almost entirely ignored in this essay and can only be touched upon now. It was pointed out in the earlier paper on permissiveness that one of the cogent psychoanalytic reasons for permissiveness was to avoid frustrations to prevent the presumed consequences of frustration, aggression, and possibly mental ill-health. Fenichel has cogently discussed this problem, and I will not repeat his argument.[16] Suffice it to say that in the extreme permissive situation there is probably a good deal of frustration which cannot be dealt with since by definition it is not supposed to exist. Nobody is frustrated if almost anything is permitted everybody (except,

[16]Otto Fenichel, *The Psychoanalytic Theory of Neurosis* (New York: Norton, 1954), pp. 584–589.

perhaps, in the adult group when some members want to get the work done), but as we have seen everything is not permitted. There is a wide band of thinking and activity which is not permitted, even though nothing may be openly said about this *verboten* area: don't do or say anything which will hurt other people's feelings, which is undemocratic (or that anxiety-provoking word, authoritarian), which is uncooperative, which will prevent the group from reaching its goals and meeting its needs. Above all, don't be an unnice person who is hard to get along with. The autocratic implications of all this should be obvious. Like consensus unanimity thinking,[17] extreme permissiveness carries within itself the seeds of authoritarianism. Conformity, not rational conformity which is necessary for any social life, but irrational and emotional conformity and loss of freedom are the prices paid for this questionable product. Other prices, while not as high, are devastating to the individual, especially to the teacher. Guilt at not being nice, at not being sociometric, at not being a good guy is probably increasing among content-oriented teachers. Anxiety lest one say or do the "wrong" thing, lest one be undemocratic, lest one hurt someone else's feelings, lest one be obstructive (the older word is "argumentative"), lest one not appear right, or—most crushing to the teacher—lest one not be permissive, lest one not let whole children grow as wholes, lest one not be warm and loving, is also increasing. Again, the ultimate price of the permissive-group complex is freedom of the individual. Permissiveness, as preached in some educational literature, can be a corrosion of individual freedom, the freedom of the individual intellect to wander, to speculate, to be daring, to be imaginative, even to be radical. To permit too much is really to permit very little.

Many readers may think that the argument as presented is extreme. And it is. But it is believed that the tendency as outlined exists to an extent little realized by educators themselves. And what is worse, the idea that the philosophy being espoused may be questionable, may be deleterious to children and to teachers, is not even considered. Educators are also often not aware of the metaphysical quality of contemporary permissivist doctrine. Nor are they aware of its dogmatism. As Dewey aptly said, "It is not too much to say that an educational philosophy which proposes to be based on the idea of freedom may become as dogmatic as ever was the traditional education which is reacted against."[18]

A final word is in order. In a healthy democratic classroom the bounds and limits of behavior must be clearly known and understood by teacher and pupils. Pupils must understand authority. Authority of course does not mean authoritarianism. Nor is authority a dirty word. It is an inevitable concomitant of the social process. In the classroom it inheres in the teacher and only seldom in the class group. To be permissive, especially in an extreme fashion, is to blur and confuse the outlines of the class social situation. This does not mean that a teacher should not be permissive. The difficulties mentioned arise when permissiveness is espoused (explicitly or implicitly) *as a basic doctrine* of educational practice and is not something a teacher occasionally is. When it is espoused as a basic doctrine, it, like all other dogmatisms, leads not to democracy but rather to authoritarianism in the classroom.

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[17]Kerlinger, "The Authoritarianism of Group Dynamics."
[18]Dewey, *op. cit.*, p. 10.

MEAD'S CONCEPT OF SELF: A CONTRIBUTION TO EDUCATIONAL PHILOSOPHY

BY DAVID RAPPAPORT

AMONG GEORGE HERBERT MEAD'S NUMEROUS CONTRIBUTIONS TO PHILOSOPHY AND TO SOCIAL PSYCHOLOGY HIS CONCEPT OF SELF HAS become the item of greatest interest to students of education and of child development. One finds numerous references in educational literature to the importance of self in the understanding of child growth. The word self is usually used in combination with other words such as self-acceptance, self-approval, self-awareness, self-discipline, self-respect, self-criticism, etc.

Although Mead's name is usually listed in references to the contributors to the literature on the concept of self, the authors seldom describe Mead's contribution. It is the purpose of this paper to analyze Mead's concept of self and to indicate its importance to students of education.

THE SOCIAL PROCESS

Mead has written widely upon the most abstract problems of philosophy such as metaphysics, cosmology, epistemology, axiology, and space-time, but all of these were dealt with from the point of view of the social process itself. In Mead's thinking mind, thinking, consciousness, and self—all arise out of the same process of social action.

Whereas some social psychologists have held that one could understand the problems of social behavior if he studied the behavior of the individual, Mead held the opposite view that the behavior of the individual could be understood only if the behavior of the group were understood. He wrote:

> Social psychology studies the activity or behavior of the individual as it lies within the social process; the behavior of an individual can be understood only in terms of the behavior of the whole social group of which he is a member, since his individual acts are involved in larger, social acts which go beyond himself and which implicate the other members of that group.[1]

The question of environment is of great concern to students of education. Scientists may view the environment as the matter which exists independent of a mind that conceives it, but in Mead's thinking the environment itself is part of a social process and, therefore, is at the same time different for different individuals. One of Mead's basic assumptions is that the life process assumes an organism that selects from the environment that which will sustain it, hence the individual and the environment that he selects are results of a social process.

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[1]George Herbert Mead, *Mind, Self, and Society*. (Chicago: University of Chicago Press), 1934. p. 6.

THE DEVELOPMENT OF THE SELF

Gesture. Gesture is the first concept in the development of self. A gesture is an act by one individual that calls out a response by a second individual. Two animals face each other and then go through some motions. First one animal moves and then the other moves aside. One animal sticks out a paw and the second animal moves in a circle. A series of gestures may be performed as the two animals circle around. Mead called this a conversation of gestures. A similar conversation was probably held when the first man met the second man. In a conversation of gestures there are a series of acts, first by one individual which calls out a response by the other individual, which in turn calls forth a new response by the first individual and this again brings out a response by the second individual. This process may go on and on. This process may be described as a circular response. It must be noted, however, that the term conversation is devoid of speech but merely denotes that a series of gestures are taking place.

Significant gesture or significant symbol. A gesture becomes a significant symbol when the individual making the gesture takes the same attitude toward it that the individual reacting to it does. The following is an example: Two men meet on the street and one stretches his arm out to the other. Both men may interpret this stretching out of the arm as a gesture of friendship and both men expect the same response to this gesture. This gesture of stretching one's arm out is a significant symbol because both men interpret its meaning in the same way. The stretching out of one's hand may also be interpreted as a belligerent act. It is a significant symbol once again if both men interpret the meaning of the gesture in the same manner.

The significant gesture differs from pure gesture in the attitude of the individuals. If the first individual had stretched out his hand as a symbol of friendship, but the second individual took that to be a threatening sign and slapped the first individual, this would indicate that this gesture had not yet become a significant symbol.

The common attitude of two or more people to the same gesture gives it meaning and thus makes it significant. As Mead wrote:

> Gestures become significant symbols when they implicitly arouse in an individual making them the same responses which they explicitly arouse, or are supposed to arouse, in other individuals, the individuals to whom they are addressed; and in all conversations of gestures within the social process, whether external (between different individuals) or internal (between a given individual and himself), the individual's consciousness of the content and flow of meaning involved depends on his thus taking the attitude of the other toward his own gestures.[2]

Language. Language is the most important of the significant symbols developed by man. First, language is significant symbols. It was originally developed as significant vocal symbols. It is the basis for communication. Man learns a language so that he can communicate with others around him. Although man can communicate his ideas by means of sign language, this form of communication is very limited.

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[2] *Ibid.*, p. 47.

Second, by means of language one communicates with one's self. The vocal sounds have now been replaced by inner kinesthetic response so that the individual hears his own silent words. This process of communicating with one's self, or this process of inward conversation, is thinking.[3]

Third, by means of language one takes the role of another.

Role playing. Man, unlike animals, has the ability to assume the role of another person. This is a tendency to act as the other person acts. Mead's assumption is that man has the ability to assume the role of another because of the development of the cortex of the brain. Because man is capable of speaking he is capable of reacting to his own speech as if he were an outside person.

Role playing takes on two forms. The first is play. Here the individual takes the roles of various individuals one after another, but only one at a time. One has often observed a child playing by himself. He is first the sick child, then the doctor, then the nurse, the mother, etc. The child takes on one role after another but only one at a time.

The second, and more complicated, form of role playing is the game. Here the individual assumes all of the roles of the participants of the game at the same time. The second baseman of a baseball team assumes the roles of the first baseman, shortstop, and third baseman at the same time so that he can anticipate their moves accordingly.

The importance of role playing is that the individual tends to act as the other does and by assuming the attitude of the other controls or modifies his own actions.[4] The individual who takes the roles of others sees himself as others see him. The self "has the characteristic that it is an object to itself, and that characteristic distinguishes it from other objects and from the body."[5]

The individual talks to himself, takes the role of another, assumes the attitudes of the other, sees himself objectively, and hence delays his own response. This delayed response enables the individual to choose alternate courses of action. In Mead's philosophy this process constitutes thinking.

The generalized other. Mead described two stages in the development of the objective self. At the first stage the self is an organization of the attitudes of a single group. The individual's self as a member of the family is an organization of the attitudes of the members of the family. As a member of a church group the individual has a different objective self that is determined by the attitudes of the church members.

Since the individual is a member of several groups, he has several selfs or selves. As the individual has a tendency to organize in himself the attitudes of the members of a particular group, he also has the tendency to organize in himself the attitudes of all of the groups. At this second stage of development there is a larger or more generalized self. This larger self Mead called the generalized other. He wrote:

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[3] *Ibid.*, p. 73. See also Mead's, *The Philosophy of the Present.* (Chicago: University of Chicago Press, 1932)., p. 83.

[4] *Ibid.*, p. 74.

[5] *Ibid.*, p. 136.

> At the second stage in the full development of the individual's self that self is constituted not only by an organization of these particular individual attitudes, but also by an organization of the social attitudes of the generalized other or the social group as a whole to which he belongs.[6]

The wider the community the the more generalized the self. Just as the attitudes of a particular group help to control or to modify the actions of the individual member of that group, so does the generalized other become a means of social control. When the generalized other is lacking, social control is lacking. The failure of most international bodies for peace is that the individual members play the role of their own group but not of the world community. Mead's description of the difficulties that faced the League of Nations thirty years ago may be applied to the United Nations of today.

> Any self is a social self, but it is restricted to the group whose role it assumes, and it will never abandon this self until it finds itself entering into the larger society and maintaining itself there. . . . All over Europe, and more specifically at Geneva, we see nationals with great distrust and constant rebounds trying to put themselves in each other's places and still preserve the selves that have existed upon enmities, that they may reach the common ground where they may avoid the horror of war, and meliorate unendurable economic conditions. A Dawes Plan is such a social object, coming painfully in existence, that may control the conflicting interests of hostile communities, but only if each can in some degree put himself in the other's place in operating it. The World Court and the League of Nations are other such social objects.[7]

THE "ME" AND THE "I"

Mead saw the self as made up of two aspects: the "me" and the "I." The "me" is the objective self that the individual sees when he assumes the role of the generalized other. The "I" is that part of the self that reacts to the "me." The individual is always conscious of the "me" because the "me" is developed in the social process by which the individual assumes the attitudes of others. The individual is never conscious of the "I." The "I" is the individuality of the person acting. Before an individual acts he assumes the role of the generalized other and thus modifies his proposed action but he can never know how he will really act. How often has one rehearsed a speech he was going to deliver and anticipated the effect it was going to have upon the audience, and yet, at the time the speech was actually given the rehearsed words were not uttered but others spoken instead? At the very moment of acting his individuality predominates. The "I" is, therefore, the unpredictable.

The moment the individual has acted he is conscious of having acted. The action of the "I" becomes part of the "me." The individual, according to Mead, is never conscious of acting but only of having acted, no matter how short the time of the activity.

The "me" is the controlled self whereas the "I" is the uncontrolled self. Social control is possible when the "me" is in control over the "I." In Mead's words:

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[6] *Ibid.*, p. 158.
[7] *The Philosophy of the Present*, p. 194.

> Social control is the expression of the "me" over against the expression of the "I". It sets the limits, it gives the determination that enables the "I," so to speak, to use the "me" as the means of carrying out what is the undertaking that all are interested in. Where persons are held outside or beyond that sort of organized expression there arises a situation in which social control is absent.[8]

Although the self is the result of the organized patterns of the group or of society, one should not infer that the "me" of all the individuals of a group are the same. Although every individual develops his self by assuming the attitudes of others, each individual self reflects a different aspect and perspective. The uniqueness of each individual determines the differences in the relational patterns that constitutes the organized group.[9]

IMPLICATIONS FOR EDUCATION

The ideas developed by Mead help explain the thinking of L. Thomas Hopkins, E. T. McSwain, and others. What is the "learning under the skin" and what is the "psychological curriculum?" How does the individual determine what his curriculum shall be? Mead gave some answer when he wrote:

> The environment is only there in so far as the organism is sensitive to it. In this sense the organism selects its environment. And in so far as the environment does answer to the sensitivity of the form, the environment acts upon the form.[10]

The classroom environment will contribute to a learning situation only if the child will respond to it. The curriculum that is meaningful to the child will affect his learning. In this sense the child selects his own curriculum or that to which he is sensitive.

In a healthy classroom situation the child assumes the role of the teacher by assuming the attitudes of the teacher. But the teacher must also assume the role or attitudes of the child. The language used by both teacher and child become significant symbols when both react in the same way to the words used. Too often there is a real lack of communication because the teacher has not been sympathetic to the needs of the child.

How does the child grow from immaturity to maturity, from irresponsibility to responsibility? How does the child achieve self-discipline? Mead's answer to such questions was that the classroom should be organized like a game so that all of the children assume the role of the generalized other. He wrote as follows:

> The importance of the game is that it lies entirely inside of the child's own experience, and the importance of our modern type of education is that it is brought as far as possible within this realm. The different attitudes that a child assumes are so organized that they exercise a definite control over his response, as the attitude in a game controls his own immediate response. In the game we get an organized other, a generalized other, which is found in the nature of the child itself, and finds its expression in the immediate experience of the child. And it is that organized activity in the child's own nature controlling the particular response which gives unity, and which builds up his own self.[11]

(*Continued on page 160*)

[8] *Mind, Self, and Society*, p. 210.
[9] *Ibid.*, p. 201.
[10] G. H. Mead, *The Philosophy of the Act*. (Chicago: University of Chicago Press, 1938), p. 312.
[11] *Mind, Self, and Society*, p. 159.

SKETCH FOR AN ORGANISMIC PHILOSOPHY OF EDUCATION

BY BERTRAM D. BRETTSCHNEIDER

Coherence As an Ontological Principle

COHERENCE IS AN ONTOLOGICAL PRINCIPLE WHEN IT REFERS TO THE ORGANIZATIONAL TOGETHERNESS OF THE PARTS OF A SPATIO-TEMPORAL WHOLE. It is the degree of togetherness established in the mutual relations between part-part and whole-part of any structured finite organismic entity. Nature is here construed as a community of organisms. Coherence is thus a comment on the degree of organization immanent in this community. It is a comment on the degree of organization immanent in both ontogeny and phylogeny.[1] It is applicable to the history of an individual organism, to the history of a species, and to the history of the universe taken from any vantage point you please.

The primordial universe of energy relations is infinite; finite groupings evolve from it through the inherent motion of energy. We may speak of different levels of organismic structures as does Alexander when he refers to the emergence of simple physical motion, matter as physical, matter with secondary qualities, life, and mind.[2] Emergence refers to the rearrangement of energy relations in such fashion that a new organization appears which is marked by a relatively high degree of stability or internal coherence.

The form of a coherently related system comprehends those relations which are logically possible in terms of the internal structure of the system. The structure of an organism thereby defines and delimits its capacity to function. To call a given level of systematized energy relations an organism is a comment on the uniqueness of the pattern of structure and function at that level of phylogenetic development as contrasted with the structure and function of organisms at a different level.

The Primordial Aspect of Coherence

The universe, conceived as a community of organisms, reveals two aspects of coherence—a primordial and a consequent aspect. This double aspect of coherence exists through the necessity that each ontogenetic individual maintain itself by the capture and expenditure of energy.

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[1]"Ontology" and "phylogeny" are terms which have been appropriated from biology and used here in lieu of "particular" and "universal" respectively. Ontogeny refers to the unique spatio-temporal history of an individual organism. Phylogeny refers to the structural organization of a class of organisms as this has evolved in space-time.

[2]Samuel Alexander, *Space, Time, and Deity*, vol. II. (New York: The Humanities Press, 1950), p. 52.

The primordial aspect of coherence is the possibility of coherence which is formally implied in the inherent structural relations of each finite organism. As such it comprehends the normative and necessary relations which ought to obtain in the environmental and internal structural organization of the members of the community of organisms. On the other hand, the consequent aspect of coherence is the actual coherence relationship which comes to exist in the ontogenetic development of a given organism. As such, coherence is a statistical concept. As normative, the primordial aspect of coherence provides the standard for judgment of the consequent aspect. It thus prescribes the conditions of moral existence which are conceivable on the basis of possible relations into which an organism—when considered structurally from a phylogenetic viewpoint—may enter. Ontogenetic development thus realizes the possibilities which are inherent in the phylogenetic structure of the individual and which limit the ontogenetic organism's capacity to function.

The educative process is directly concerned with ontogenetic development. Education has its theoretical and practical aspects. Activity is practical when it results in a modification of behavior. The practical emphasizes the motor aspect of environmental control. Man has the potentiality to change his behavior and his environment in terms of individual or collective purposes. Before we act, we must understand the structural organization and possibilities of the environmental context in terms of which we are acting and reacting. Practical conation must be preceded by theoretical inquiry. In the theoretical attitude, mind reviews the changes to be wrought in the structure of the environmental field.

The goal of our activity is to bring together the outstanding variables in a more effective coherent relationship than we have had heretofore. Methodologically, the first consideration after the recognition that we have a problem before us is an analysis of the given problematic field. This preliminary analysis involves the specification of the variables operant within the problematic situation, an analysis of the nature of the relations obtaining between these variables, and a statement of the possible alternative relations into which these variables may enter. This last step must do no logical or ontological violence to the given variables with which we are dealing.

This procedure takes into account the primordial aspect of coherence. The structure of our given variables provides us with normative legislation as to what relational possibilities may conceivably be involved in our subsequent practical activity. In a sense, this consideration of alternative relational possibilities serves the purpose of defining and delimiting the universe of discourse of our activity.

The primordial aspect of coherence is necessary as well as normative. In our preliminary inquiry we must examine the nature of the logical relations which hold between our given variables. The subsequent relations into which these variables may enter must not contradict the given logical matrix taken into account as the primordial aspect of coherence. Symbolic logic is the tool, *par excellence*, whereby the truth-possibilities of a logical matrix may be explored. The method of coherence may serve as a method for educational inquiry with the employment of symbolic logic as a tool for laying bare the relational possibilities which subsist in any given structural situation.

This use of symbolic logic makes the introduction of it into the secondary school mathematics curriculum an educational imperative. If symbolic logic is to be employed as a proper tool of inquiry, then every student who enters college should have some high school background in this area. At present, symbolic logic is assigned a subordinate role in the undergraduate and graduate school curricula. It is not even included in prescribed programs for science majors at many colleges nor has it a place in the liberal arts curricula at many colleges.

All disciplines which involve the manipulation of related qualities can work toward the goal of refining their symbols systems to the point where they can profit from the analysis of relational possibilities provided by symbolic logic. At first blush, it may seem that this request is germane only to the physical sciences. However, the possibilities of structure revealed by such a work as Schillinger's *The Mathematical Basis of the Arts* suggests that this hypothesis is not as improbable nor as remote as it may seem.

MECHANICAL AND TELEOLOGICAL ORGANISMS

The essence of the normative and necessary relations of the primordial aspect of coherence is sociality. Sociality refers to the mutual interaction and interdependence of structured organisms both in their environmental and internal structural relations. No structured organism can live in and by itself. It must constantly adjust itself to changing environmental conditions by developing structural modifications which serve to extend its control over its environment.

In this connection, George Herbert Mead makes a distinction between those organisms which are capable of establishing their own relational coherences by virtue of having greater differentiation of structure and those organisms which are incapable of such behavior. The latter are at the mercy of the elements, so to speak. Mead calls the former type of organisms "teleological" in their functioning, and the latter are "mechanical" in their functioning.[3]

A mechanical organism is one that may be defined in terms of other organisms whereas the teleological organism is one which defines other organisms with respect to itself. Mead offers the electron as an example of an organism which functions mechanically. "An electron is defined in terms of the fields of all other electrons as they are registered in its field."[4] The electron is thus a participant in and is dependent upon a process occurring outside of itself.

On the other hand, the teleological kind of functioning is one in which an organism participates in and constitutes its environment as an extension of its own striving for coherence. The occasion for such extension of the organism into its environment arises from the needs and demands of its internal structural organization. The internal structural relations of the organism function so that the process which is going on inside the organism becomes extended to the outside through a further elaboration of the process of meeting the need. Mead suggests by way of illustration that ". . . it is that which is sought which is present in the inner organic operation which controls the attainment of the outer object—thus,

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[3]George H. Mead, *The Philosophy of the Act.* (Chicago: The University of Chicago Press, 1938), p. 301.

[4]*Ibid.*, p. 302.

sexual stimulation is the inner reproduction of ova and spermatozoa."[5] In this way, the inner situation of the organism because of its lack of coherence has what Whitehead calls its "subjective aim." The subjective aim of the organism is comprehended by the primordial aspect of coherence in terms of which the organism makes demands for satisfactions which may be achieved from the outside.

This distinction between the mechanical and teleological kinds of organismic function finds the former more or less passive in achieving its structural satisfactions whereas the latter may be considered a more or less active function. The organism which functions teleologically goes out and gets what it is after. However, it should be noted that this distinction is not absolute. There are situations where one organism may take an active role, and other situations where it may play a passive role. Whether an organism functions teleologically or not depends upon the nature of the external structural relations in which it finds itself and its capacity to produce some significant modification of these relations. In this way, an amoeba may play an active role in extending a pseudopod to engulf a food particle, but it may be helpless in resisting a change in the pH of its medium. The educative process may be conceived as an attempt to alter the functional behavior of children from mechanical activity to teleological.

The teleological manner of functioning suggests that an organism, if allowed to act unhindered, i.e., teleologically, is capable of positive action on its own behalf so that other organisms in the environment are utilized for their consequences. However, these other organisms do not rest idly, but impose a limiting condition on the action of the first organism. It is in terms of this mutual give-and-take of phylogenetic types that the primordial aspect of coherence may be recognized. This is what Alexander has identified as the process of natural selection making itself felt in the cosmos as a value principle.

No phylogenetic type prevails everywhere in the community of organisms. Closely related phylogenetic types are not identical because different environmental relations make for a wide variety of conditions of existence. The squirrel family, for example, is composed of clearly related members, some of which are arboreal, some burrowers in the soil, and some terrestrial. Despite the common morphological pattern there have been modifications in accordance with the particular mode of existence of each species.

The coherence which has been established by a phylogenetic type in relation to its organismic field has two effects. On the one hand, there is the perfecting of many internal coherences or structural adaptations of the organism to its particular field. On the other hand, there is the failure to exhibit adaptations which would serve the organism in meeting the minimal demands it makes upon its environment it its quest for coherence.

In this latter case such lack of coherence has disvalue and an organism would cease to perpetuate itself unless it could modify its internal and environmental structural relations. A case in point where the structure of the phylogenetic type has undergone valuable modification is that of the squirrel. The phylogenetic type exhibits claws and tails. In the case of terrestrial squirrels, the claws become sharp spikes which enable them to grip the bark of a tree; in the case of the arboreal

[5] *Ibid.*, p. 302.

or flying squirrels, the tail hair is flattened and the skin of the sides of the body make a loose flap so as to form a gliding plane; and in the case of the soil burrowers, the tail is reduced to a stub and the claws become strong digging tools. In each case the structure of the organism makes for the realization of a coherence between the organism and its environmental field of relations.

The possession of these tools by the phylogenetic type suggests that any organism has in its ontogenetic development the capacity to realize the teleological potential inherent in its structure and in the proliferation of this structure into the environmental field of relations. Because the structure of the organism is a phylogenetic "given," it is possible to conceive the internal and environmental relations of the organism in such fashion that we may be able to say that the "given" dictates the nature of the relations which make for optimal coherence.

This formal, primordial aspect of coherence is normative because it is possible to conceive of sets of relations which best suit an organism in terms of its phylogenetic structure. This primordial aspect of coherence is likewise necessary for if the organism does not fulfill its capacity to function, it will cease to function actively. If it does not realize its capacity to function teleologically, the organism will perhaps succumb to the overbearing demands of some unforeseen set of relations.

Human societies take notice of this situation where these societies adopt policies which actively promote the education of the immature. Today, the alternative to education is intellectual subjugation by the propagandistic influences of dominant cultural interests. The introduction of advertising and public relations techniques into the American political arena, for example, is a cynical comment on the political amorality of those who seek to make mechanical objects of their fellows. The advertising and public relations technicians—these are not creative functions by any stretch of the imagination—are amoral agents in their reduction of mind to mechanical modes of function. On the other hand, the political interests which exhibit that mode of teleological functioning which seeks to make the minds of men mechanical objects exhibit a form of immorality which can only imply phylogenetic disvalue. Education is thus the supreme moral undertaking for man in terms of man's phylogenetic potential. The suppression of alternative sets of relational possibilities which tend to make mind a mechanical function constitutes the supreme mode of disvalue for organismic philosophy.

THE CONSEQUENT ASPECT OF COHERENCE

The consequent aspect of coherence is empirical. It makes reference to the state of coherence which actually obtains in the course of ontogenetic development. This aspect is the realization of the possibilities contained in the normative nature of the primordial aspect of coherence.

The consequent aspect of coherence is statistical in effect. It cannot be supposed for a moment that every element of a coherent system of relations is in complete conformity with the total pattern of coherence. In the case of a magnetic field of molecules of oxygen, it cannot be supposed that every single molecule of the gas has actually turned parallel to the field like a compass needle. The coherence which is effected in the case of the magnetization of the field is vectorial or statistical. Although single molecules may constantly change their orientation with

respect to the entire field, there is a preponderance of orientation in the direction of the field so that the observed coherence may be recognized as a magnetic field. As a statistical affair, coherence seems to emerge modally. It is not unlike the resultant of vectorial forces if the relational elements of coherence may be considered as vectors.

One characteristic of a statistical mode is that it is relatively stable and sluggish as compared to measures which are distant in magnitude from the parameter. As a statistical mode, the consequent aspect of coherence seems to be a conservative phenomenon which tends in the direction of establishing a relatively stable set of organismic relations. This stabilizing influence of coherence appears to be based upon the extreme difficulty of restructuring relations once a basically satisfactory coherence has been established.

The occurrence of a propitious set of environmental circumstances makes its recurrence more probable than the initial coming into being of a new event. As a result, a set of favorable circumstances tends to be retained at the expense of relations which prove to be detrimental to any given organism. The means whereby an organism is capable of determining, in some measure at least, its set of environmental relations is afforded by its particular mode of teleological functioning. Ontogenetic differences which are comprehended by the consequent aspect of coherence depend upon the efficiency of the organism in adjusting its particular teleological mechanism to its particular organismic field. The consequent aspect of coherence is thus concerned with what an organism actually does whereas the primordial aspect is concerned with what an organism can do.

In terms of the doctrine of coherence conceived as the basis for educational method, it has been suggested that the primordial aspect of coherence leads us to an analysis of the possibilities for relational reorganization of the variables present in our problematic field. A logical analysis of the matrix of relational possibilities serves to delimit the field to a few candidates for coherence. These remaining possibilities constitute hypotheses which are put to the test.

We put these several hypotheses to the test and then examine the results of what has actually come to pass. The consequent aspect of coherence takes note of the degree of error of prediction resident in the formal possibilities entertained in the primordial aspect of coherence. The primordial aspect of coherence is formal and theoretical. The consequent aspect is statistical and empirical. What elements of the primordial structure are not present in the consequent structure? Which hypothesis permits greater flexibility for subsequent use in the sense that it permits a greater number of statistical degrees of freedom?

An examination of the consequent aspect of coherence serves subsequent inquiry as the basis for the analysis of structure of the primordial aspect of coherence. The educator who must employ symbolic logic as a tool in the primordial aspect of coherence must become familiar with techniques of statistical inference, reliability determinations, and factorial analysis to become intelligent in his examination of the consequent aspect of coherence. The art educator, for example, need not beg off because statistics is not within his province. The symbolic logician has worked out techniques for developing calculi and algebras of classes of things which are not necessarily quantitative. Similarly, with the development, extension, and refinement of symbol systems in non-scientific disciplines, it is to

be hoped that correlational analysis of variables of qualitative disciplines such as art and music will be possible. One direction which must be taken by statistical analysis is that of developing statistical techniques for the treatment of rank-order or ordinally-numbered variables. This may be a link between current statistical treatment of cardinally-numbered quantities and techniques of treating qualitative variables on the basis of an ordinal number arithmetic.

With these techniques at his disposal, the educator may find himself in a position to reduce the number of chance variables at play in the structural orderings which lead to coherence. Theory of statistical inference is offered too little and too late to too few. Probability theory can be introduced into the secondary school curriculum. At present, we find college freshmen balking at the little that is offered to them of probability theory. They never have had any adequate preparation in this area. Finally, when they do master techniques of statistical inference these become entrenched in their minds like arithmetical algorithms. The students do not understand the applicability of statistical theory. In a sense, statistical theory is the mathematical embodiment of the method of coherence. The elements of statistical theory must be refined, redefined, and distilled for presentation to secondary school students. Young artists and musicians as well as scientists must come to recognize the bounds and limits of applicability of their qualitative manipulations. They must understand their qualitative orderings in terms of relational orderings as well. Artists and musicians who treat the qualities of their discipline without concern for the relations which come between the qualities are functioning as mystics rather than artists.

THE LIBERATING AND MORAL FUNCTION OF EDUCATION

Man's primitive endowments constitute the basis of his freedom. Man is free to select from among the possibilities open to him the type of relations he conceived as favorable to himself. The test of the efficacy of teleological behavior is afforded ontogenetically; a 'philosophy of life' is an analytic comment on the manner in which men utilize their freedom for action. Ontogenetically, the individual organism must maintain an equable balance between its own needs and the formal demands required of its phylogenetic type.

We seem to be involved in an implied paradox: the individual gains freedom to function as he surrenders his freedom to the necessity of formal considerations. This is what Alexander means when he calls freedom "self-determination."[6] We are free to act when we know the extent to which the self is restricted by formal as well as external factors. The self is free when aware of its delimited structure and nevertheless can act in terms of these limitations.

Whitehead similarly defines freedom in terms of our capacity to act as we are able to act. He says:

> The literary exposition of freedom deals mainly with the frills . . . Freedom means that within each type the requisite coordination should be possible without the destruction of the general ends of the whole community. Indeed, one general end is that these variously coordinated groups should contribute to the complex pattern of community life, each in virtue of its own particularity. In this way individuality gains the effectiveness which issues from coordination, and freedom obtains power necessary for its perfection.[7]

[6]Cf. Alexander, *op. cit.*, ch. X, pp. 315–338.

[7]Alfred N. Whitehead, *Adventures of Ideas.* (New York: The Macmillan Company, 1933), pp. 84, 86..

In this sense, the statistical concept of 'degrees of freedom' may apply to the statistical nature of the consequent aspect of coherence. The greater the number of possibilities for action or degrees of freedom available to a phylogenetic type, the greater should be the probability that that organismic type may succeed in realizing its structural capacities in the ontogenetic development of individual organisms. Freedom is thus the ability to realize phylogenetic potential in the course of ontogenetic development.

This suggests that a man is not free when he casts a ballot in response to an impassioned campaign oration. He is free when he votes in terms of a rational analysis of the alternatives which have been presented to him in the course of an election campaign. In the latter case, he is making fuller use of his phylogenetic structural capacities. Education is the institutionalized process whereby man is liberated, i.e., whereby he comes to realize his structural potential and gains skill in its full use.

This paper is an essay in ontology. The problems of education are ultimately the concerns of ontology. The coherent individual constitutes the real and the goal of education is the development of real individuals. Coherence in its most significant terms refers to the felicitous coordination of the structure and function of an individual organism with the structure and function of the community of organisms in which he participates. In human valuational terms, this suggests that the individual should value coherently with the collective standard. This means that what is accorded status as real and valuable has been accorded social approval to a high degree.

This raises an interesting problem: if an educational system educates children to the point where their beliefs and attitudes are fully consonant with the accepted beliefs of the parent culture, then in what sense can it be said that the children are free? To put the matter another way, if a given set of beliefs are instilled without the children being trained in techniques of critical thinking, then it would follow that the children have been indoctrinated in the beliefs of a dominant segment of the culture. When propaganda is acritically accepted we are not free. In recent years, one of our major political parties has raised the cry that the American press is predominantly a one-party press. To the extent that the citizenry of our country have not been educated to form judgments on the basis of critical examination of data, their political judgments, for example, have some basis other than cognitive. The collective standard assumes the aspect of a political bandwagon; its appeal is emotional and qualitative rather than cognitive and rational. Where beliefs are founded on this basis we find a need for a re-examination of prevailing educational theory and practice.

Indoctrination, mimesis, and propagandizing are not actually implied as the consequences of the proposal of organismic philosophy that the collective standard should supply the criterion for the evaluation of all judgments. The collective standard refers to the dominant judgment of the community of inquirers with which the individual seeks coherence within any given frame of reference. The collective standard is an hypothesis that such and such a set of propositions is generally agreed upon by competent inquirers as providing the most effective knowledge that is available at a given time with respect to a given universe of discourse. That the collective standard is a temporarily accepted hypothesis implies that is has been put to the test of alternative hypotheses and the judgment has been

empirically confirmed that this particular proposition is most adequate to explain the known facts at a given time and place.

In keeping with Charles S. Peirce's doctrine of fallibilism, we can never be certain that the hypothesis recognized as the collective standard is the best hypothesis. Each person making a judgment has the responsibility for determining the most adequate criterion for evaluating these judgments. The collective standard is constantly referred to as the standard for popular judgment. It is constantly undergoing revision and reevaluation in the course of this process.

The teacher has the moral responsibility of continually training the young and immature in the proper use of the collective standard as the criterion of judgment. The teacher's primary obligation is the development of a healthy respect for the correct use of the methodology of judgment-making as embodied in the primordial and consequent aspects of coherence. The teacher who develops the attitude that the collective standard is an hypothesis avoids the pitfalls of totalitarian indoctrination. Children who are properly trained in the methodology of judgment-making are thereby free.

Each organism is free to the extent that it realizes the potentialities for achieving coherence in terms of its phylogenetic structure. Education is thus the supreme instrument of man's freedom. As such, the guarantee of educational quality imposes a moral responsibility. The nature of this responsibility is in keeping with the moral order immanent in nature. Morality implies recognition of the conditions of responsible choice as given in the primordial aspect of coherence. In implies further the recognition of the responsibility to act in terms of these primordial conditions. Paul Weiss suggests that ". . . the freedom that pertains to (man) is but a special illustration of a freedom embodied in every other natural being."[8] He is saying that the community of organisms, i.e., nature, constitutes a continuous moral order, and every organism must accept the challenge of existence. The constant quest for coherence in the course of ontogenetic development is an expression of instinctive or survival value. It may be called the "value underlying values." It is in its most basic form the nature of moral value.

That an organism meets the challenge of existence, it achieves a vicarious immortality in the perpetuation of its phylogenetic type. This is in addition, of course, to the immediate satisfaction of its structural needs. The acceptance of responsibility as implied in the attempt to confront directly the challenge of existence constitutes the moral enterprise. That an organism fails to meet the challenge, it fails to satisfy its basic needs and its failure threatens the phylogenetic community to which it is responsible in the sense that each individual has a responsibility to Peirce's "unlimited community."[9] Any individual act which is in opposition to the best interests of the organismic type may be considered irresponsible and immoral.

It follows then that the liberating function of education constitutes the moral charge for each individual. Freedom is a natural function in the sense that the potentiality for freedom is resident in man's natural or primitive endowment. We must indict an educational process as immoral which does not enable the individual to realize his endowed potentialities within the proscribed limitations of the collective standard of his culture.

[8]Paul Weiss, *Nature and Man*. (New York: Henry Holt and Co., 1947), p. xv.

[9]Cf. James K. Feibleman, *An Introduction to Peirce's Philosophy*. (New York: Harper and Brothers, 1946), pp. 382 ff.

ON THE PHILOSOPHICAL NEUTRALITY OF COUNSELORS

BY ROBERT L. BROWNING AND HERMAN J. PETERS

THERE APPEARS TO BE AN URGENT DEMAND AMONG GUIDANCE COUNSELORS FOR A CLARIFICATION OF THE RELATIONSHIP BETWEEN THE COUNSELOR'S BASIC PHILOSOPHY AND HIS COUNSELING PROCEDURES. *Can* a counselor remain philosophically neutral, on the one hand, and *should* the counselor do so, on the other hand. Is Vordenberg's dictum true that "Regardless of the *kind* of personal philosophy evolved by the counselor, it must surely affect the techniques he uses and the evaluation of the effectiveness of his work?" (16: 440)

I. Demands for the Consideration of the Influence of Philosophy of Counseling

After giving a survey of the inadequacies of the current attempts to develop a philosophical foundation and direction for guidance, Donald Walker and Herbert Peiffer issue a call to action. They say, ". . . we would urge close and careful attention to the problems of the goals of counseling, both at the general theoretical level and as they affect the progress of the individual counseling case. . . . We are handicapped by the fact that in psychotherapy we are, to some extent, the victims of our disease orientation, our bias against value judgments and our contradictory cultural goals." (17: 209) Mathewson says that the old myth of economic man is inadequate. He says, "A new myth may be forming; we cannot tell what it may be and perhaps we cannot hasten its formation, or even consciously affect its form. But unless we wish to take a completely passive position in the determination of our national destiny, it seems necessary to think about and to choose between alternative sets of social and moral values, especially in the education and guidance of our youth." (9: 26)

Arbuckle compares the counselor and the surgeon, saying that the philosophy of the surgeon may have very little effect on the recovery or death of a patient. "The attitude and the philosophy of the counselor, however, are all important and in any research it is difficult to keep such an inconsistent factor consistent." (2) In Arbuckle's thinking the personnel point of view must include a consideration of every aspect in the development of the student—". . . his intellect, his emotions, his physical being, his moral values, his skills and aptitudes, his means of recreation, his esthetic and religious values, his social adjustment, and his environmental situation. (3: 3) This is a big order! The fulfillment of such a goal in guidance is greatly complicated by the fact that the counselor, in dealing with the counselee's development along such broad lines, is confused about whether or not his own loyalties, his own philosophy of life, should be shared, or whether, in fact, he can keep himself from sharing it!

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"Counseling involves the interaction of two personalities through the medium of speech and other symbolic behavior. It is reasonable to suppose, therefore, that the structure of each of these personalities will have a marked influence on the interaction. It may be hypothesized further that the ways in which the personality structure of each of the counseling participants is symbolized in the speech of the interview will also have a marked effect upon the interaction.

If it is true that the counselor's personality influences the direction, course, and outcome of the counseling interaction, it might be profitable to speculate about the kinds of counselor personality traits which are likely to facilitate counseling and those which are not."

Strang states,

"The counselor should be himself but not impose himself. He should be genuine and sincere. He is likely to fail if he tries to play a role that is not natural for him. If a person cannot risk being himself in the counseling relationship, he should not try to be a counselor. Moreover, he is consciously or unconsciously influenced by his theory of counseling; his attitude toward school policies, his outlook on life, his attitude toward people. In short, his counseling is an expression of his personality, not merely a technic applied at will." (14:)

Pepinsky and Pepinsky, writing in 1954, state,

There is no denying that the counselor's behavior, also, is subject to change as a function of his experience in working with clients." (11: 173)

A little later under this same topic, "The Primary Function of Interaction," they go on to say,

"Indeed, the more closely we examine the counselor's motives, the more they become suspect! It appears to be, at best, nonsense and, at worst, a delusion to try to maintain that the counselor does or ought to leave his own needs parked outside the door while he interviews a client. We can state only that the explicit function of the counseling relationship—to help the client to change—should not be interferred with or destroyed." (11: 174)

Perhaps the greatest single influence on counselors to be philosophically neutral has come from the work of Carl Rogers. His non-directive theory of psychotherapy was built on the belief that man could be trusted to work his way through to insights and new orientation if he could have a genuinely permissive relationship with the counselor in which he could open his inner life to himself and the helping person. Early research by Rogers led him to state that, "One can read through a complete recorded case or listen to it, without finding more than a half dozen instances in which the therapist's views on any point are evident. . . . One could not determine his diagnostic views, his standards of behavior, his social class." (12: 358) Rogers did not, at that time, comment on the effect of the half dozen times and the absolute inevitability of such sharing of values. More recently, but only after a number of years of general confusion about the issue, has he addressed himself more directly to this pressing concern. In 1957, he said, in answer to certain articles challenging his position, that, "One cannot engage in psychotherapy without giving operational evidence of an underlying value orientation and view of human nature. It is definitely preferable, in my opinion, that such underlying views be open and explicit, rather than covert and implicit." (13: 199) Rogers' insistence upon as much neutrality as possible has been a helpful research technique and allowed him and his associates to see deeply

into the inner dynamics of the self. From his research there is ample evidence that the self, when free from threat or attack, is able to consider "hitherto rejected perceptions, to make new differentiations and to reintegrate the self in such a way as to include them." (12: 365) Rogers' method seems honestly to help the person change. ". . . as changes occur in the perception of self and in the perception of reality, changes occur in the behavior." (12: 363) The fact that persons often integrate their lives on levels that are not ultimately satisfactory but which only give the illusion of well-being must now be faced by Rogers and others.

II. ATTEMPTS TO CLARIFY THE RELATIONSHIP OF BASIC PHISOLOPHY TO COUNSELING

One of the most powerful attempts to do away with philosophical relativism has been made by the humanistic psychotherapist and author, Erich Fromm, in his several writings, especially in *The Sane Society*. Fromm seeks to establish a solid foundation for the development of mental health for all men in whatever society. He observes that man has not only physiological and anatomical commalities but that he is governed universally by certain basic psychic factors as well. His system of right and wrong is therefore built squarely upon whether or not man as man, in his essential being, is having his basic human needs fulfilled.

Fromm's inclusion in his list of basic needs the necessity for a "frame of orientation and devotion" has led him to be most sympathetic toward the insights of the great religions and philosophies of the past and present. He is sensitive also to the moral standards propagated in our varying societies, because he believes that whole cultures can become full of *defects* which can and do tend to make men mentally ill. Societal arrangements, therefore, often must be changed before man's needs can be met. This observation forces counselors to be concerned with social, political, and religious philosophies which have created and are sustaining, often, such unhealthy social structures.

Fromm's theory is an attempt to build on what man's needs are *objectively* and not on what man *feels* his needs to be. This concept challenges in many ways the goal of non-directive counseling which tends to center on the process of man's expression of his inner feelings of need without reference to the fact that such needs are often a result of cultural defects which will not and cannot bring ultimate health to the client. This is true because of the very nature of his human condition, and the breadth of his needs which are in the area of ultimate loyalties and basic, undergirding frames of orientation, about which most counselors feel insecure and from which discussions they tend to steer clear!

A similar trend to that of Fromm's can be seen in the writings of Kurt Lewin. He stated as far back as 1935 that, "The individual psychical experiences, the actions and emotions, purposes, wishes and hopes, are rather embedded in quite definite psychical structures, spheres of the personality, and whole process." (8: 54)

Also to be found in Fromm and Lewin thought is an emphasis on man's freedom and the necessity to broaden the range of that freedom in psychotherapy as well as in intelligent political action. Lewin observed that often the individual area of freedom is very small due to the vectors and forces in his field of psychic experience, built on past identifications, inhibitions and loyalties. Yet, this freedom

existed. Man as man had qualities beyond the realm of the animal. Therapy should help man use his freedom to find the paths to growth, and to overcome the psychic barriers.

One of the most dramatic and controversial attempts to deal with the question of philosophy in psychotherapy has been made by Dr. Viktor E. Frankl, the Director of the Neurological Polyclinic in Vienna and a Professor of Psychiatry at the University of Vienna. Frankl's point of view grows out of the emphasis in existentialist philosophy on man's actual conditions of existence. Man in his essence is endowed with certain capacities for freedom, for decision making, for determining his destiny. Man is a responsible being with the power to transcend his own situation and to prophesy the results of his decisions. His intellectual powers and his psychic powers are qualitatively different than other animals. Frankl joins Fromm, at this point, in that he is seeking to analyze man's basic need for a value system on which he can base his decisions, as a result of which he will increase his freedom and his meaning.

He recognizes the significance of both individual psychology, stemming from Adler, and psychoanalysis, stemming from Freud. He maintains, however, that psychotherapy will be incomplete until man has a "psychotherapy of the mind" which deals with philosophical issues. Differing with Freud and others, he says, "The individual's philosophical attitude is part and parcel of his psychological one and emerges in every case." (6: 34) He also believes, against the stream of thought in psychotherapy, that, "In no case should the intellectual problems of a person be written off as a 'symptom'." (6: 33)

Frankl honestly discusses the many profound problems related to his point of view, and pushes ahead, along with Fromm, to establish certain fundamental values inherent in man's situation. And yet, he maintains that existential analysis must not interfere with the ranking of values. ". . . what values he elects is and remains the patient's own affair. Existential analysis must not be concerned with what the patient decides for, what goals he sets himself, but only that he decides at all. . . . The physician should never be allowed to take over the patient's responsibility; he must never permit that responsibility to be shifted to himself; he must never anticipate decisions or impose them upon the patient. His job is to make it possible for the patient to reach decisions; he must endow the patient with the capacity for deciding." (6:270)

Such a view has been given great impetus by the philosophical writings of Martin Buber. Buber's philosophy urges man to relationships of trust with other men—very much like that between the counselor and the client in a permissive setting; and yet, he believes that real trust must allow and encourage honest *dialogue* between both parties. When there is a real meeting of persons (Buber describes this meeting in terms of an I—Thou relationship—very similar to Schweitzer's "reverence for life" concept) each person is bringing his full self to the dialogue. He must "be willing . . . to say what is really in his mind about the subject of conversation. And that means further that on each occasion he makes the contribution of his spirit without reduction and without shifting ground." (4: 112)

Dialogue on a philosophical level, on the level of the quest for ultimate meaning is a basic need for every human being. The counselor must be sensitive, never-

theless, to the existential situation in which the client finds himself at any given time.

Gordon Allport emphasizes the profundity of this renewed interest in studying the basic conditions of man's existence. He says, "Existentialism calls for a doctrine of an active intellect, for more emphasis upon propriate functions, including self-objectification and oriented becoming. In particular it calls for a wider and fresher view of anxiety, of courage, and of freedom. (1: 80) Allport stresses the fact that Freud and his followers have dealt mostly with the anxiety in man aroused by feelings of guilt and fear of punishment and not at all the anxiety which comes from a fear of *nonbeing* (death—either actual or psychological, in the Buber sense of being not in relation; not affirmed and confirmed by others).

Allport believes that the consideration of philosophical matters has been greatly de-emphasized in counseling, to the detriment of our whole concept of personality structure. Philosophic and religious decisions have to do with what he terms *Intentional Characteristics* which become a part of the personality. He believes that, "Intentional characteristics represent above all else the individual's primary modes of addressing himself to the future. As such they select stimuli, guide inhibitions and choices, and have much to do with the process of adult becoming. Relatively few theories of personality recognize the pre-emptive importance of intentional characteristics." (1: 89)

So, we are seeing a powerful movement within the guidance field, psychotherapy, philosophy, theology, and psychology for a deeper view of man's problems of existence, his wide and deep needs, his essential freedom of being, and his finite situation which forces him to go beyond knowledge to an ultimate devotion—built on faith (not an irrational faith, but faith, nonetheless).

Buber, in his William Alanson White Lectures given at the Washington School of Psychiatry, says that the counselor or educator "cannot wish to impose himself, for he believes in the effect of the actualizing forces. . . . The propagandist who imposes himself, does not really believe even in his own cause, for he does not trust it to attain the effect of its own power, without his special methods." (4: 111) While Buber believes so strongly in the power of honest meeting between persons in an I—Thou relationship of mutual trust and confirmation, even with differences of loyalties, he is very *cautious about the right of the psychotherapist* to embark upon a 'treatment of the essential in man'. He agrees with the late Viktor von Weizsaecker who said that it is not the privilege of the therapist or counselor to deal with the final destiny of man.

Returning to the area of guidance and student personnel services, it is becoming equally well established that basic educational philosophy does inevitably influence the procedures of the guidance counselor. If he is thoroughly pragmatic in his orientation he will probably be inclined to play down or ignore the importance of religious or metaphisical beliefs that the student brings to the counseling situation. He may feel that value judgments must be left out of the considerations. Of course, with this Pragmatic Philosophy which seems on the surface to be a neutral position, goes a basic commitment just as much so as the student may have, with his religious commitment. It seems to us that considerations of ultimate values cannot be avoided by the counselor as a person, and that he must operate from some philosophical point of view—some form of Idealism, Realism (Christian

or otherwise), Pragmatism, Naturalism, or Existentialism (again religious or otherwise).

It seems imperative that guidance counselors and educators must join other leaders in education, psychology, psychotherapy, philosophy and religion in doing basic research in this field.

In this spirit of scientific inquiry (even with its obvious limitations in the area of ultimate values) and also in the spirit of dialogue (with free discussion of important questions related to man's basic needs and his basic conditions of existence) we should proceed to clarify and come to decisions about the foundation and goals of counseling.

Recently, Williamson has stated that, "I have further argued for making explicit our own value orientations as individual counselors, not in order that we may adopt a counselor's orthodox creed, but rather that we may responsibly give societal and moral direction to our individual work in terms of the explicitly desired goals chosen by our student clients." (19: 528)

When guidance counselors, psychotherapists, or religious counselors admit that they are not philosophically neutral, then we will be able to study more systematically the effect of our philosophical loyalties upon our counseling.

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THE CONCEPT OF SARVODAYA IN GANDHIAN EDUCATION

BY T. A. PRIEST

MOST PEOPLE IN THE WESTERN WORLD, AS INDEED IN INDIA ITSELF, WILL REMEMBER MAHATMA GANDHI NOT FOR HIS SOCIAL REFORM MOVEMENT BUT FOR HIS PART IN THE EMERGENCE OF INDIA AS AN INDEPENDENT REPUBLIC. And yet Gandhi consistently preached and practised a particular way of life, pointing to a certain interpretation of the ideal State, and showing the political techniques and the type of education necessary to give them effect. It is doubtful if any philosophical originality may be credited to him, for he saw himself as a Sanatani Hindu recalling to Indians the essential teachings of classical Hinduism, shorn of the impure doctrine which had through the ages led to the development and perpetuation of social evils sanctioned by religion. But his social philosophy of *Sarvodaya* gave rise to a distinctive educational theory and practice, known to the West as Basic education. In this article I propose to examine these doctrines which may yet prove to be his most lasting legacy to India, and understanding of which will assist a correct assessment of the political and international behaviour of independent India. For the present Indian leaders without exception subscribe to a certain extent to Gandhi's doctrines, some of them with the deepest conviction.

The term *Sarvodaya* has been variously interpreted as "the uplift of all," "the greatest good of all," "welfare of all," "service to all," and "the co-operative commonwealth." Gandhi, translating Ruskin's *Unto This Last* into Gujerati, entitled it *Sarvodaya*, and records that this book so captured him, and reflected his deepest convictions, that it made him transform his life:

"The teachings of *Unto This Last* I understood to be:

1. That the good of the individual is contained in the good of all.

2. That a lawyer's work has the same value as the barber's inasmuch as all have the same right of earning their livelihood from their work.

3. That a life of labour, i.e., the life of the tiller of the soil and the handicraftsman, is the life worth living."[1]

The *Sarvodaya* movement is a peculiarly Indian approach to Socialism, "decentralist and agrarian in emphasis," rejecting the concept of the class struggle, and envisaging the "establishment of a harmonious, casteless, classless society, with equal opportunity for all, to be achieved without the use of violence."[2] Its programme focusses upon the village, with emphasis on the ideal of village self-sufficiency. It accepts the objective of the Welfare State, but rejects the notion

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[1]Gandhi, M. K., *An Autobiography or the Story of My Experiments with Truth.*

[2]Fisher, Margaret W., and Bondurant, Joan V., "Indian Approaches to a Socialist Society", *Indian Press Digests—Monograph Series*, The University of California, Berkeley, No. 2, July 1956, pp. 35–36.

that this entails concentration of power or the undertaking by the State of socially beneficial measures, in favour of the view that through education man must acquire the habits of service, self-sufficiency, and self-reliance. It is a doctrine of social obligation, eschewing dependence on the State.

I. RELIGION AND THE GOOD LIFE

Gandhi was above all else a religious man, and it was from religious faith that he derived his physical and moral courage, and was led inevitably into reform work. He claimed that at the back of every word he had uttered, and of his every act, after his entry into public life, there had been a religious consciousness and a religious motive.[3] His religious-philosophical position was that of *advaitin Brahmanism*[4], which has for long been the dominant Indian philosophical tradition, and in which the highest place is reserved for knowledge of the Supreme. In India the commonest word for this Supreme is Brahman—infinite, immeasurable, spiritual in essence, yet Existence, Knowledge, and Bliss; and the search for the nature of Brahman, and the effort to experience it within oneself, are the main pursuits of philosophy and religion. Man, in his deeper nature, is one with this ultimate Essence.

> "Being thus rooted in the same Brahman, all individuals and beings in the universe are interconnected. . . . We are pervaded and permeated by a common self behind us which is Brahman. . . . None is thus alien to others."[5]

An important practical outcome of the doctrine of *advaita*, is that of Non-Violence (*Ahimsa*). If all things are manifestations of Supreme Reality, when we hurt other things we hurt ourselves and we hurt God. Violence in any form is thus the negation of God or Truth. In its negative sense, the doctrine of *ahimsa* precludes violence to any form of life—insect, reptile, animal, or man. It leads inevitably to vegetarianism, and, as practised by the Jain priests, the greatest exponents of *ahimsa*, to a refusal to kill even to save one's life. This to Gandhi was the ideal, though he recognised and permitted certain concessions to the layman. In its positive sense, Gandhi interpreted *ahimsa* to signify Love, the central message of all the major religions. It would be true to say then, that, for Gandhi, the practice of religion is the practice of love in all one's experience—in thought, in word, and in deed. Only in this way could Truth be attained.

Another outcome of *advaita* is important. The Supreme Reality, apprehended through a direct intuitional experience, is shown in the Vedas, the Upanishads, and the epics Mahabharata and Ramayana (which together make up much of the recognised scriptures of Hinduism), to be infinite and inexhaustible, incapable of comprehension in any partial approach. The Hindu believes that God never revealed Himself to one particular prophet and to the believers of one particular faith. His manifestations are innumerable. No particular religious creed can therefore, on this view, claim any finality for its own point of view. As Radhakrishnan says, there are many paths to the summit, but the view from the summit is the same for all.[6] Thus Gandhi preached the doctrine of religious tolerance:

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[3]Ganeson, S. (ed.), *Young India*, Vol. III (1927–1928), p. 350. Triplicane, Madras, 1935.

[4]A-dvaita, literally not-two, i.e., non-dualism.

[5]Atreya, B. L., "Indian Culture", *Interrelations of Culture*, Unesco, 1953, p. 134.

[6]Radhakrishnan, Sir S. (ed.), *Mahatma Gandhi: Essays and Reflections on his Life and Work*, Jaico, Bombay, 1956, p. 15.

"The Allah of Islam is the same as the God of the Christians, and the Iswara of the Hindus. Even as there are various names of God in Hinduism, there are many names of God in Islam. The name does not indicate individuality but attributes, and little man has tried in his humble way to describe mighty God by giving Him attributes, though He is above all attributes, Indescribable, Immeasurable. Living faith in God means equal respect for all religions. It would be the height of intolerance—and intolerance is a form of violence—to believe that your religion is superior to other religions and that you would be justified in wanting others to change over to your view."[7]

Gandhi also subscribed to the doctrine of rebirth—that our body dies but we are reborn in another form, in an endless series of deaths and rebirths; and in the doctrine of the moral judgment of the Universe—that our sins of this life are visited upon us in the next. The circumstances of our rebirth will depend upon the quality of life we have led in this existence. There is thus no escape from the consequences of our deeds, and all effort to live the good life is rewarded. This endless process of death and rebirth can however be escaped if we live a life so dedicated to the search for Truth that we achieve Knowledge, that we apprehend the "true Correspondence" between man and his Maker. This is the condition of *Mokasha*—Supreme Truth, Supreme Knowledge, Supreme Joy. This is self-realisation.

The good life, in practical terms, would require the unconditional practice of the following ideals—Truth, Non-Violence, Chastity, Non-Stealing, Non-Possession, Service, and Bread-Labour.[8] These, and more, were to be taken as vows as soon as the individual felt he could sustain them in practice. Of the vow of Truth, Gandhi says that it is not enough that one does not ordinarily resort to untruth, but that one ought to know that no deception might be practised on any account. Truth may require opposition to one's parents and elders. It applies not only to words, but also to thought and to action. Of the vow of Non-Violence, the individual not only will not kill, but also will do no harm even to those who do him grievous harm. He must not be angry with them, but must love them. Thus he would oppose tyranny, whether of parents, government, or others, but he would never hurt the tyrant, nor entertain thoughts towards him other than those of the purest love. He would seek to conquer the tyrant by love, resisting his will, but suffering punishment even to death if necessary. This Gandhi argued, entailed the highest form of courage. It was not the non-violence of the coward, or the non-violence of political expedience, but the positive love deriving from religious faith and dedication to ideals. But, Gandhi argued, it was well-nigh impossible to observe the two vows of Truth and Non-Violence unless one also observed the vow of chastity. This would entail not only sexual abstinence, but also complete control of all the senses, i.e., *Brahmacharya*. Thus, in addition to the elimination of sexual passion, one must curb the palate. One must eat to live, and not live to eat. Stimulating foods and drugs, and liquor and tobacco, would be foregone. Religious dedication, and hence Knowledge, is impossible to one who cannot thus purify and simplify his physical life.

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[7] *Harijan*, May 14, 1938.

[8] Gandhi, M. K., "Ideals for the Ashram of Soul-Force", quoted in *Mahatma Gandhi: Essays and Reflections*, *op. cit.*, pp. 438–446.

The good life means not only that one will not steal what is commonly considered the property of others, but also that it is theft if we use articles which we do not really need. This ideal of Non-Stealing is extended into the ideal of Non-Possession, or voluntary poverty. It is not sufficient that we possess little, but we must keep nothing that is not absolutely necessary for our bodily needs. Thus, if we can do without furniture, we should do so. The follower of these vows will, Gandhi says, by constantly thinking thereover, simplify his life.

Service to our fellow beings becomes a necessary part of the good life, because the only way to find God is to see Him in His creation, and to be one with it. God is in all things. The individual must work not only for his own spiritual freedom, through the renunciations already mentioned, but also for the spiritual freedom of the whole of mankind. Thus Gandhi reconciled self-realisation with social service. It was for this reason that he preferred the term "Sarvodaya" as best fitting his movement. Salvation was not to be sought in solitude, though meditation and solitude were necessary aids to spiritual health.

The ideal of bread-labour, Gandhi felt, also emerged necessarily from the other ideals, for any exploitation of the labour of others is a form of violence. He found support for this principle not only in Hindu scriptures, but also in the Bible ("In the sweat of thy brow shalt thou eat thy bread"), and in the writings of Tolstoy. This, for Gandhi, meant manual labour for all. If one, intellectually gifted, or engaging in business, made more income than he needed for his own self-limited requirements, he would apply his surplus to the service of his fellows. But, no matter how intellectually gifted, he would not be exempted from the obligation of productive work. He should, as a matter of religion, and as a matter of social duty, be substantially self-supporting by his own hands in the basic necessities of life—food, clothing, and shelter. For an understanding of Gandhi's ideas on education, appreciation of this condition is essential.

Gandhi says: "Realisation of Truth is impossible without Non-Violence. Chastity, Non-Stealing, and Non-Possession are means to achieve Non-Violence. Non-Violence is the Soul of Truth. Man is mere animal without it."[9] And, "The human body is meant solely for service, never for indulgence. The secret of happy life lies in renunciation. Renunciation is life. Indulgence spells death. Such life must be wholly and solely dedicated to service."[10]

II. THE IDEAL STATE

In examining Gandhi's views on the ideal State we must note three central propositions.

The first is that national self-rule depends on individual self-rule or self-control. This is national *swaraj*, based on personal *swaraj*. The individual must live in constant devotion to the vows we have already examined. He must be religiously dedicated to the simple life of pure morality and Love, he must be non-violent in every way, and he must be independent of everything but his immediate environment by limiting his personal wants to his minimum needs and by being substantially self-supporting in their physical fulfillment. If there is violence in the

[9] *Young India*, November 12, 1925.
[10] *Harijan*, February 24, 1946.

individual there will be violence in the State. The achievement of the non-violent society depends therefore on all being non-violent; otherwise systems of public control have to be devised, and any control or government is in its nature a form of violence for it interferes with responsible individual freedom. Ideally there would be no State as such. If all persons could be raised to the level of responsible action, non-violent, and looking to the welfare of others rather than to their own, a condition of enlightened anarchy would be achieved. Gandhi once described this as spiritualised democracy based on the equality of man, not only in theory as he believed to be the case in the Western democracies, but also in practice. Any form of totalitarian government would be completely ruled out on this view.

The ideal of enlightened anarchy was, however, unattainable, and Gandhi the realist therefore held, with Thoreau, that that State was best which governed least. Like all other ideals the ideal of no State was ever receding, and virtue lay in the struggle towards the personal perfection which would realise it, and not in the attainment of it.

The goal was a completely decentralised society in which everyone would rule himself in such a manner that he would never be a hindrance to his neighbors. It would be a society based on non-violence, and consisting of "groups settled in villages in which voluntary co-operation (would be) the condition of dignified and and peaceful existence." There would be no exploitation, no middlemen, no centralised machine-based mass-production, no profit motive. It would be a society in which law-courts and lawyers would be unnecessary because they would have no business.

The second proposition is that Western capitalist, industrialised civilisation is bad. Gandhi's attitude there is inevitable to one who accepts his premises, for the life of self-sufficient simplicity is difficult in a culture which hustles and bustles in a growing complexity of big cities and of technology. His first major attack on Western life came in 1908 in *Hind Swaraj*,[11] a short book stating the conditions of the good life and the necessity for Indians to achieve personal *swaraj* before they could either expect or handle national *swaraj*. In this work Gandhi argues from the Gujerati description of civilisation as "good conduct," and the belief that morality entails "mastery over our mind and passions." The more we indulge our passions, he says, the more unbridled they become. The Indian forefathers therefore had set a limit to indulgence. A man is not happy because he is rich, or unhappy because he is poor. The forefathers dissuaded against luxuries and pleasures.

> "We have managed," Gandhi says, "with the same kind of plough as existed thousands of years ago. We have retained the same kind of cottages as we had in former times, and our indigenous education remains the same as before. We have had no system of life-corroding competition. Each followed his own occupation or trade, and charged a regulation wage. It was not that we did not know how to invent machinery, but our forefathers knew that, if we set our hearts after such things, we would become slaves and lose our moral fibre. They therefore decided that we should do only what we could with our hands and feet. They saw that our real happiness and health consisted in a proper use of our hands and feet. They further reasoned that large cities were a snare and a useless encumbrance, and that people would not be

[11] *Hind Swaraj*, Navajivan Publishing House, Ahmedabad, 1946 (revised edition).

happy in them, that there would be gangs of thieves and robbers, prostitution and vice flourishing in them, and that poor men would be robbed by rich men. They were therefore satisfied with small villages."[12]

Western civilisation, seeking to increase bodily comforts, pandering to indulgence, takes note neither of morality nor of religion. It is irreligion. The people of Europe, he says, appear to be half mad. They lack physical strength; they cannot be happy in solitude. Women slave in factories. He says: "This civilisation is such that one has only to be patient and it will be self-destroyed. It must be shunned." But, he goes on, civilisation is not an incurable disease. The people of the Western world are not inherently immoral and their experiences will eventually lead them to cast off the evil.

It should be emphasized that, despite the foregoing, Ghandi was not opposed to machines as such. But he opposed the system which enabled man's enslavement by machines. In his modified ideal of the least government he would have essential public services nationalised for the public good, the government holding them in trust for the people. But his ideal society, and this modified version of it, still would have no use for large cities, large scale transport systems, and so on; nor would it have use for large hospitals and many doctors, for doctors he felt had an interest in sickness rather than in health education—they pandered to evil by artificially removing the natural consequences of indulgence. This also applied to artificial birth control. Artificial techniques made people slaves to their animal passions by enabling avoidance of consequences, and the only technique of birth-control compatible with man's higher nature and purpose was the self-control of the Brahmachari.

Gaols, a concession to violence, would not be punitive. They would be centres of education and of productive useful labour, and police, non-violent in approach, would regard their job not as the detection of crime after the event, but as the prevention of crime through example and education.

The franchise qualification would be that of productive labour—the extension of the ideal of bread-labour into politics. Taxation would be collected in the form of labour and production. Payment of taxes in this way would ensure that they were used for the benefit of the areas making the payments, and so prevent the impoverishment of the rural areas by the flow of wealth to the cities. Together, these devices would tend to make people self-sufficient, self-reliant, and fearless.

The third proposition is that the ideal State would be pacific. There would be no call for armed forces. The State would not incline to aggression; and in the event of armed aggression against it there would be the resistance of non-violent non-cooperation. This is the famous technique of *Satyagraha*, defined by Ghandi literally as Truth-force, or popularly as Love-force or Soul-force. Resistance would take the form of personal suffering, self-imposed in love. Even if many millions were slaughtered, the victory would go to the suffering nation and not to the aggressor. It would be a victory which would enable the whole of mankind, a victory through love, and purification through suffering. This was his advice to the Chinese on the occasion of the aggression by Japan; and so too, later, to

[12] *Ibid.*, pp. 44–46.

Europe in the face of German aggression. Armed alliances would be condemned, and participation in them. They can have only one outcome—for, breeding distrust and competition, they lead to the resolution of dispute by force, which harms not only the participants, but also all mankind. But the type of courage necessary in the *Satyagrahi* would be possible only if it derived from a deep faith in God and the brotherhood of man, and conviction that the good in man's heart in the long run outweighs the evil.

The dominant theme throughout all of Ghandi's writings on the ideal State is that people get the sort of government and society that they deserve. The remedy lies in personal purification, for a nation of pure individuals would be a pure and healthy nation, in this sense a Welfare State.

III. Social Reform and Education

Ghandi's programme for social reform entailed the virtual re-education of the entire population of India. We cannot here detail all the social, economic, and religious problems which he sought to ameliorate, but by briefly stating his programme of reconstruction,[13] each item of which he regarded as indispensable in the climb to individual and national *swaraj*, we shall imply some of them, and at the same time indicate what it is that the "New Education", *Nai Talim*,[14] sets out to do.

The main features of his programme were: the promotion of intercommunal harmony, especially between the Hindus and the Muslims; the removal of untouchability; the promotion of self-sufficiency (*Swadeshi*), especially through the *Khaddar* movement, i.e., the wearing of home-spun, home-woven cloth only; village sanitation, health and hygiene; and the emancipation of women. Not until Muslims and Hindus lived together in perfect peace and mutual trust, until the social blot of untouchability was removed from Hinduism by a sincere effort on the part of the caste Hindus to reform themselves from within and to recognize the untouchables as their brothers and equals, until every home had its spinning wheel and every village its loom, and until every village was a place of cleanliness and simple, good living, could Ghandi feel that his people would command respect from the rest of the world, or be in any wise fitted for national *swaraj*. But let that quality of life be achieved, and *swaraj* would follow inevitably.

It is now a matter of history that Gandhi practised what he preached. He slaved indefatigably for reform, by example, teaching prayer and self-imposed suffering in the form of penitential fasting and the like. He took untouchables into his ashrams, lived in their parts of the villages and cities, scavenged with them, cleaning streets and latrines, to demonstrate that these *Harijans*, "sons of God," as he called them, were human beings with the same basic needs and rights as other human beings. He devised improved spinning wheels and formed associations to spread them throughout the country and to teach their use. From the 1920's he

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[13] Gandhi, M. K., *Constructive Programme, Its Meaning and Place*, Navajivan Publishing House, Ahmedabad, 1948 (2nd edition).

[14] "Basic Education" is a term properly applied to the primary stage of the "New Education", and thus "Pre-Basic" and "Post-Basic" refer to the pre-school and secondary school stages respectively. However, the term "Basic" refers also to the underlying theory and to the method. *Nai Talim* is, therefore, the total educational programme designed to regenerate India according to Gandhi's ideal of *Sarvodaya* and run on "Basic" principles and practice.

lauded the spinning-wheel as the saviour of the illiterate, impoverished millions, and taught that through its daily use lay the path to God. Spinning was a form of prayer. His association for the promotion of village industries sought to re-educate the village people in the vanishing crafts of spinning, weaving, soap-making, oil pressing, bee-keeping, paper-making, etc. Liquor he regarded as the device of the Devil, enslaving its victims, leading to violence. Tax revenue on liquor was tainted and it would be India's lasting shame if she financed her education from it. Thus he advocated Prohibition to such effect that the National Congress adopted it as one of its major social objectives.

It was not until 1937 that Gandhi's ideas on education were systematically developed or adopted by the Congress Party as a matter of policy, but he had already tried them in practice in South Africa as early as 1904 in the Phoenix Settlement, had stated them in some detail in *Hind Swaraj* (1908), continued his experimentation on the Tolstoy Farm in the Transvaal (established 1911), and from the early 1920's elaborated them at length in his *Young India* and *Harijan*. There also had begun in 1906 a nationalist school movement to which he regularly gave his advice. Thus, by 1937, when Congress Governments took office in certain of the provinces of British India, under the terms of the 1935 India Act, a favourable climate of opinion had been formed. The new provincial Governments, faced with straitened economies, and committed both to Prohibition, which deprived them of much needed revenue, and to a policy of universal education, turned readily to Gandhi for guidance. It was in this atmosphere that the historic Wardha conference took place in October 1937, as a result of which Basic education might be said to have come into being as a systematic educational policy.

The main proposition under discussion at the Wardha conference was that education should centre on *Practical instruction in profit-yielding vocations*, with academic content correlated to productive craft work. As Gandhi stated it:

> "For the all-round development of boys and girls all training should, as far as possible, be given through a profit-yielding vocation. In other words, vocations should serve a double purpose—to enable the pupil to pay for his tuition through the products of his labour and at the same time to develop the whole man or woman in him or her, through the vocation learnt at school.
>
> "Land, buildings and equipment, are not intended to be covered by the proceeds of the pupil's labour.
>
> "All the processes of cotton, wool and silk, commencing from gathering, cleaning, ginning, carding, spinning, dyeing, sizing, warp-making, double-twisting, designing and weaving, embroidery, tailoring, paper-making, cutting, book-binding, cabinet-making, toy-making, gur-making are undoubtedly occupations that can easily be learnt and handled without much capital outlay."[15]

Gandhi looked not so much at the economic advantages of the scheme, as at its educational values, for he believed that under it individuals would be better educated, would learn the dignity of labour, and derive the spiritual and moral strength that goes with self-reliance and personal independence. Of his many statements on these two aspects, economics and educational value, we may quote the following:

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[15]Gandhi, M. K., *Harijan*, October 2, 1937.

"As a nation we are so backward in education that we cannot hope to fulfill our obligations to the nation in this respect during this generation, if the programme is to depend on money. I have, therefore, made bold, even at the risk of losing all reputation for constructive ability, to suggest that education should be self-supporting. By education I mean an all-round drawing out of the best in child and man—body, mind and spirit. Literacy is not the end of education nor even the beginning. It is only one of the means whereby man and woman can be educated. Literacy in itself is no education. I would therefore begin the child's education by teaching it a useful handicraft and enabling it to produce from the moment it begins its training. Thus every school can be made self-supporting. . . . I hold that the highest development of mind and soul is possible under such a system of education."[16]

"If such education is given, the direct result will be that it is self-supporting. But the test of success is not its self-supporting character, but that the whole man has been drawn out through the teaching of the handicraft in a scientific manner. In fact I would reject a teacher who would promise to make it self-supporting under any circumstance. The self-supporting part will be the logical corollary of the fact that the pupil has learnt the use of every one of his faculties."[17]

"I fancy that, even under an ideal system of Government, we shall not be able to devote the two thousand million rupees which we should require for finding education for all the children of school-going age. It follows, therefore, that our children must be made to pay in *labour* partly or in whole for all the education they receive. The introduction of manual labour will serve a double purpose in a poor country like ours. It will pay for the education of our children and teach them an occupation on which they can fall back in after-life, if they choose, for earning a living. Such a system must make our children self-reliant. Nothing will demoralise the nation so much that we should learn to despise labour."[18]

The Zakir Hussain Committee, appointed by the Wardha conference to prepare a syllabus along the lines of Gandhi's suggestions, also took the view that the "Wardha Scheme" was fully justifiable on educational grounds, irrespective of its economic implications. Even if it were not self-supporting in any sense, they argued, it should be accepted as a matter of sound educational policy and as an urgent measure of national reconstruction. It was "doubly fortunate" however that this good education would also incidentally recover the major portion of its running costs. The Committee felt that education through productive work was desirable, because it would relieve the child from the tyranny of purely academic instruction, the intellectual and practical elements of experience would be balanced, and the child would acquire the ability "to use hand and intelligence towards socially constructive ends." It would tend to remove the barriers of prejudice between manual and intellectual workers and would conduce to a sense of dignity of labour and of human solidarity. It would relate education to life. The Com-

[16] *Harijan*, July 31, 1937.
[17] *Harijan*, June 11, 1938.
[18] *Young India*, September 1, 1921.

mittee emphasized that "our schools must be places of work, experimentation and discovery, not of passive absorption of information imparted at second-hand. So far as the curriculum is concerned, we have stressed this principle by advocating that all teaching should be carried on through concrete life situations relating to the craft or to the social and the physical environment, so that whatever the child learns becomes associated with his growing activity."[19]

In devising a draft syllabus, therefore, they had "chosen three centres, intrinsically interconnected, as the foci for the curriculum, i.e., the Physical Environment, the Social Environment, and Craft Work, which is their natural meeting place since it utilizes the resources of the former for the purposes of the latter," and had "attempted to organize the subject-matter into significant and comprehensive units of experience which will, when mastered, enable the child to understand his environment better and to react to it more intelligently because they throw helpful light on the problems and conditions of life around him."[20]

Another result of the conference was the establishment of the *Hindustani Talimi Sangh*, a National Education Association, to work as a research and development body, and to advise Congress on educational policy. This body has its headquarters at Sevagram, near Wardha, and is currently running a complete scheme of Gandhian education, from Social and Pre-Basic education to a "rural university" and teachers' college. It works in association with a hospital and leper colony, and is active in constructive social work in the villages in the area. It is substantially self-supporting and were it not being run as a national body, with a large publishing concern and recurring conference expenses, etc., it would undoubtedly be fully self-supporting.

The following statement of the objectives of an eight-year programme of Basic education, for the age-group 6 to 14 years, recently appeared in a Hindustani Talimi Sangh publication:[21]

"1. Essential knowledge, habits, attitudes and skills, necessary for clean and healthy living (individual and social). This will include activities relating to personal and community cleanliness, study of the elements of physiology, hygiene, sanitation, dietetics and physical education.

2. Training in citizenship—practical and theoretical—at home, at school, in villages, country and the world, including studies in history, geography, civics and elements of sociology and economics.

3. Capacity for self-sufficiency in food—ability to grow vegetables sufficient for the family consumption and acquaintance with the fundamental processes and principal tools of agricultural operation.

4. Capacity for self-sufficiency in cloth—ability to produce cloth from raw cotton.

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[19] *Educational Reconstruction*, including the Report of the Zakir Hussain Committee, (Hindustani Talimi Sangh, 1938), p. 126.

[20] *Loc. cit.*

[21] Aryanayakam, E. W., *The Story of Twelve Years*, (Hindustani Talimi Sangh, Sevagram, 1949), pp. 9–10.

5. Capacity for self-sufficiency in shelter.
6. Basic Craft: (i) Agriculture and gardening.
   (ii) Spinning and weaving.
   (iii) Woodwork.
   (iv) House-building and repair.
7. General Science and Mathematics.
8. Social Studies.
9. Mother tongue.
10. Art.
11. Music."

Though Sevagram, a residential co-operative community, with a sizable farm, cows and bullocks, etc., is able to organize its programme on a seven days a week basis, the above summary outline gives a good indication of the sort of thing aimed at in all Basic schools. Ideally, each Basic school should have some land attached, and even take the form of a "school village," but even where such is not practicable the vocational and practical emphasis is retained, usually through the introduction of spinning and various types of workshop activity. Productivity is regarded as the chief test of its proper functioning, and attempts to dilute the concept of Basic education by substituting "creative craft activity" for "productive activity" are condemned.[22]

There are two aspects of this scheme on which comment should be made here. The first is that it is calculated to develop "a scientific attitude of mind" rather than the mere possession of information. As E. W. Aryanayakam says, the expected result is a person who has developed a keen intellectual curiosity to know the 'how' and the 'why' of things, who has the patience and detachment to test all phenomena, all ideas and all traditions, and who has the courage and power to think for himself.[23] It seems evident that, given the requisite skill on the part of the teacher and necessary equipment, i.e., raw materials and libraries, this is not a rash expectation. Except in its self-supporting aspect, it is in fact educationally very similar in objectives and techniques to the system advocated by Dewey, with whose ideas Gandhi was conversant. It would be quite wrong to assume that, because this educational approach stands on thorough-going activity methods, it is necessarily anti-literary or anti-intellectualist. Gandhi on no occasion devalued scholarship, nor the fullest possible use of books as aids to learning. His standpoint in this connection was precisely that of the numerous Western educationists who have condemned "inert knowledge" and "dead wood" in education. He believed that by relating learning to man's natural needs of food, clothing and shelter, and to his social needs of tolerance, morality and service, knowledge would become associated with action. He frequently referred to himself as a "practical idealist," and this in large measure sums up the type of character which he expected Basic education to develop.

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[22] See, *e.g.*, *The Report of the Assessment Committee on Basic Education*, Ministry of Education, Government of India, 1956, p. 7.

[23] *Basic National Education* (Complete Syllabus for Grades I to VIII), (Hindustani Talimi Sangh, Sevagram, 1956), p. 4.

The second aspect is the approach to religious instruction. From our earlier comments on his deep religious conviction and his tolerant attitude nevertheless to the forms which religions assume, the following statement will not be unexpected. It was made in reply to a Muslim complaint that, under the Wardha scheme, sectarian religious instruction had been completely ignored and that respect for all religions was to be inculcated.

> "As to the necessity of teaching equal regard for all religions, I personally hold strong views. Till we reach that happy state, I see no prospect of real unity among all the different communities. I regard it as fatal to the growth of a friendly spirit among the children of the different faiths, if they are taught either that their religion is superior to every other or that it is the only true religion. If that exclusive spirit is to pervade the nation, the necessary corollary would be that there should be separate schools for every denomination, with freedom to each to decry every other, or that the mention of religion must be entirely prohibited. The result of such a policy is too dreadful to contemplate. Fundamental principles of ethics are common to all religions. These should certainly be taught to the children, and that should be regarded as adequate religious instruction so far as the schools under the Wardha scheme are concerned."[24]

On an earlier occasion he had said:

> "Let no one even for a moment entertain the fear that a reverent study of other religions is likely to weaken or shake one's faith in one's own. The Hindu system of philosophy regards all religions as containing the elements of truth in them and enjoins an attitude of respect and reverance towards them all. This of course presupposes regard for one's own religion. Study and appreciation of other religions need not cause a weakening of that regard; it should mean extension of that regard to other religions."[25]

We can see that Gandhi's ideas on education follow closely on his ideal of Sarvodaya. The Westerner might speculate on the relation between this and the particular approach of the Indian National Congress to Socialism. At its 60th Session, at Avadi (January, 1955), the Congress Party adopted as its objective the gradual achievement of a "Socialistic pattern of society," and called for the State to play a vital role in production. The public or national sector was to become progressively more important, particularly in the establishing of basic industries, but a private enterprise sector would continue to be important, particularly with respect to co-operatives and small-scale industries.[26]

Meanwhile, the Gandhian constructive workers who after Independence had seen the centre of planning and activity shift from Wardha to Delhi, and had in consequence gone rather out of the picture, working privately through the several Gandhian institutions, found a new leader, Acharya Vinoba Bhave, who has now become famous for his development of an action programme in *Sarvodaya*, especially through the "gift" movements of *Bhoodan*, *Sampattidan*, *Gramdan*, *Jeevandan*,

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[24] *Harijan*, July 16, 1938.
[25] *Young India*, December 6, 1928.
[26] Indian National Congress, Subjects Committee, *Text of Resolutions Adopted at Avadi Session* (Madras, Commercial, January 21. 1955.)

etc.[27] The present wedding of the Nehru approach to Socialism, based on a mixed economy of national and private enterprise, and the Sarvodaya approach, now also strongly represented in the Congress Party leadership, and which has received legislative support, may seem to be a fusion of incompatibles. This is one of the grounds on which Basic education is criticized—that it is out of step with the long term aims of the Central Government in the development of India, in that the one seeks industrial and technological advance, and the other is rural-oriented and opposed to industrial complexity.

It is not my purpose in this article to attempt a critique of Basic education, but I suspect that the sort of experimental approach to learning which it is the intention of Basic education to achieve, may well be invaluable in lifting the rural masses of India to the point where they can make the Nehru policy succeed. In the present policy of turning all primary schools into Basic schools, but of adopting multi-lateral secondary schools, and of strengthening tertiary education through orthodox universities and higher institutes of technology, there is, I believe, much good sense. I cannot see that Basic secondary schools, or Basic universities, have a promising future in India, for the overwhelming body of opinion is against them, but we may expect interesting developments in these directions from the small group of Gandhian educationists who are experimenting with such institutions.

It seems to me a most important fact that an increasing number of Indian children will commence their education in schools of the Basic type and will thus inevitably be brought into contact with the social philosophy of Gandhi. For we should expect, in result, persons who have been educated to act from a standpoint of social service, of co-operation, of religious tolerance, of human equality, and of pacifism. This is of importance not only to India, in the breaking down of undue social rigidities and prejudices, but also the world, for it is already apparent that India is coming to exercise a moral leadership and a moderating influence which is remarkable in a country so "young" in the international community of self-determining nations. It could be that the Western world, with its continuing Cold War, its galloping technology and its social problems, may yet find profitable example in the sort of society which India is seeking to develop.

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[27] i.e., Land-gift, Wealth-gift, Village-gift, Life-gift, etc. The movement, though at first glance relating in the main to land redistribution, is of a significance very much wider than this alone. It represents a resurgence of Gandhian philosophy, operating through intimate contact with the masses. See, e.g., Acharya Vinoba Bhave, *The Principles and Philosophy of the Bhoodan Yagna* (Tanjore, Sarvodaya Prachuralaya, 1956); and *Bhoodan Yagna* (Navajivan Publishing House, Ahmedabad, 1953).

MEAD'S CONCEPT OF SELF (*Continued from page 132*)

Education takes place when the "me" works in a harmonious atmosphere with the other individuals of the group. The role of the teacher is to help the child develop his "me". The teacher must first understand the manner in which the self is developed. In this respect Mead has made great contribution to educational theory.

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Volume X | April, 1960 | Number 2

Contents

Page

THE FIELD VIEW, COLOR, AND EDUCATIONAL PHILOSOPHY
Martin Levit 89

A REJOINDER TO MR. LEVIT
Harry S. Broudy 97

EDUCATION AND THE NEW SCIENCE
Vern M. Pings 98

LEARNING THEORY AND OBJECTIVE PSYCHOLOGY IN EDUCATION
William D. Spears 107

THE IMPLICATIONS OF THE PERMISSIVENESS DOCTRINE IN AMERICAN EDUCATION
Fred N. Kerlinger 120

MEAD'S CONCEPT OF SELF: A CONTRIBUTION TO EDUCATIONAL PHILOSOPHY
David Rappaport 128

SKETCH FOR AN ORGANISMIC PHILOSOPHY OF EDUCATION
Bertram D. Brettschneider 133

ON THE PHILOSOPHICAL NEUTRALITY OF COUNSELORS
Robert L. Browning and Herman J. Peters 142

THE CONCEPT OF SARVODAYA IN GANDHIAN EDUCATION
T. A. Priest 148